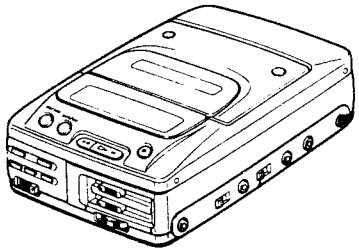
S/M Code No.91 – 123 DATE OF ISSUE 2/1992 – 1

AIWA®

HD-S100

SERVICE MANUAL



DIGITAL AUDIO TAPE RECORDER

• BASIC DAT MECHANISM : D – 3

• TYPE. H,U,K,Z

SPECIFICATIONS

■ Tape specifications

Tape	Digital audio tape
Head	Rotary head
Tape speed	8.15 mm/s
Sampling frequencies	Recording: 48 kHz, 44.1 kHz, 32 kHz Playback: 48 kHz, 44.1 kHz, 32 kHz
Digitization	16-bit linear
Number of channels	2 (stereo)

■ Audio

Frequency response	20 Hz – 22,000 Hz
S/N	85 dB (or better)
Dynamic range	85 dB (or better)
Total harmonic distortion	0.01% [or less (1 kHz)]
Wow & flutter	Measurable limit (±0.001% W.PEAK) or less

■ Input/Output Terminals

PHONES	Stereo mini jack (max. 15 mW + 15mW, EIAJ/32 Ω)
DIGITAL I/O (in/out)	Stereo mini jack (0.5 Vp-p, input/output impedance 75 Ω)
ANALOG IN	Stereo mini jack LINE: 200 mV, input impedance 47 kΩ MIC: 0.3 mV (ATT 0 dB), input impedance 10 kΩ
ANALOG OUT	Stereo mini jack Maximum output level 1.2 V (RMS, fs 48kHz), output impedance 47 kΩ

■ Power supply/Miscellaneous

Power supply	Rechargeable lead battery DC 6V (PB-25) Local AC power (using the supplied AC adaptor, DC 6.9 V)
Battery life	Supplied rechargeable lead battery PB-25 3-hour charging Recording: approx. 70 min. Playback: approx. 80 min.
Maximum External Dimensions	98.1 (W) × 43.5 (H) × 158.6 (D) mm (3⅞ × 1¾ × 6¼ in.)
Weight	Approx. 670 g (with rechargeable lead battery) (1.5 lb)

■ AC Adaptor

Rated voltage	AC-690U: AC 120 V AC-690E: AC 220 V AC-690K: AC240 V AC-690H: AC 100 V–240 V,
Rated input	17 W (E,K), 14 W (U), 15 W (H)
Rated output	DC 6.9 V AC-690U: 1 A AC-690E,K: 1.1 A AC-690H: 1.6 A
Usable Batteries	AIWA rechargeable lead battery (PB-25, PB-S26)

• Design and specifications are subject to change without notice.

AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

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DISASSEMBLY INSTRUCTIONS – 1

1. "Panel Top ASSY" Removal (See Figure-1)
   1) Remove 2 screws (Ⓐ) and then the "Lid, Cassette" in the direction of the arrow.
   2) Remove 4 screws (Ⓑ×2, Ⓒ×2) and then the "Panel Top ASSY".
   3) Remove 5 screws (Ⓓ) and then the "Panel, Bottom".

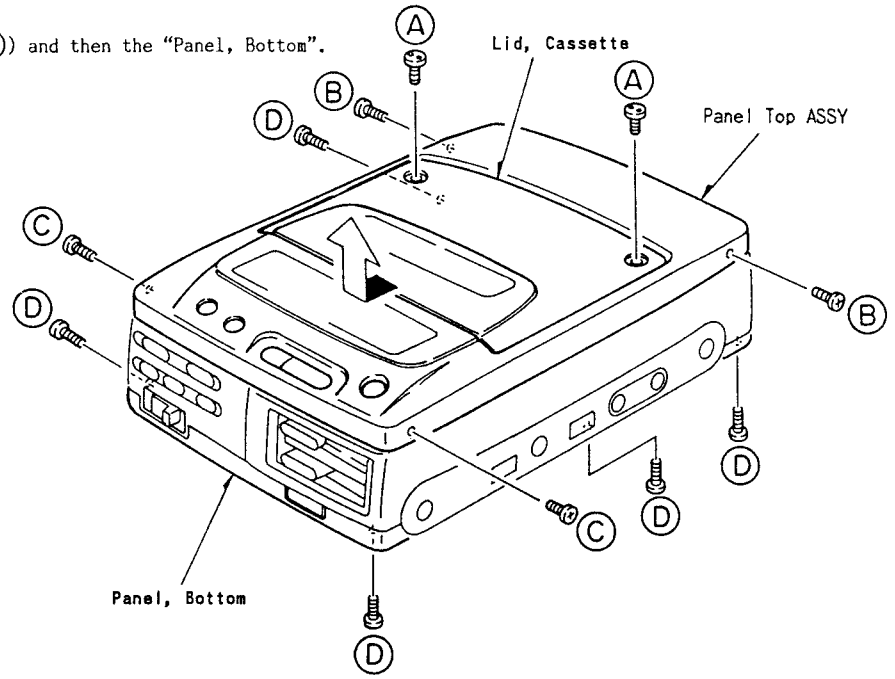


Fig-1

2. "Cabinet Main ASSY" Removal (See Figure-2)
   1) Unsolder point ⓐ of the wire.
   2) Remove screw (Ⓐ), hooks and then the "LCD C.B" in the direction of the arrow ①.
   3) Remove 2 screws (Ⓑ) and then the "Knob, Slide PW". (See Figure-2-1)
   4) Remove the "Cabinet Main ASSY" in the direction of the arrow ②, ③.

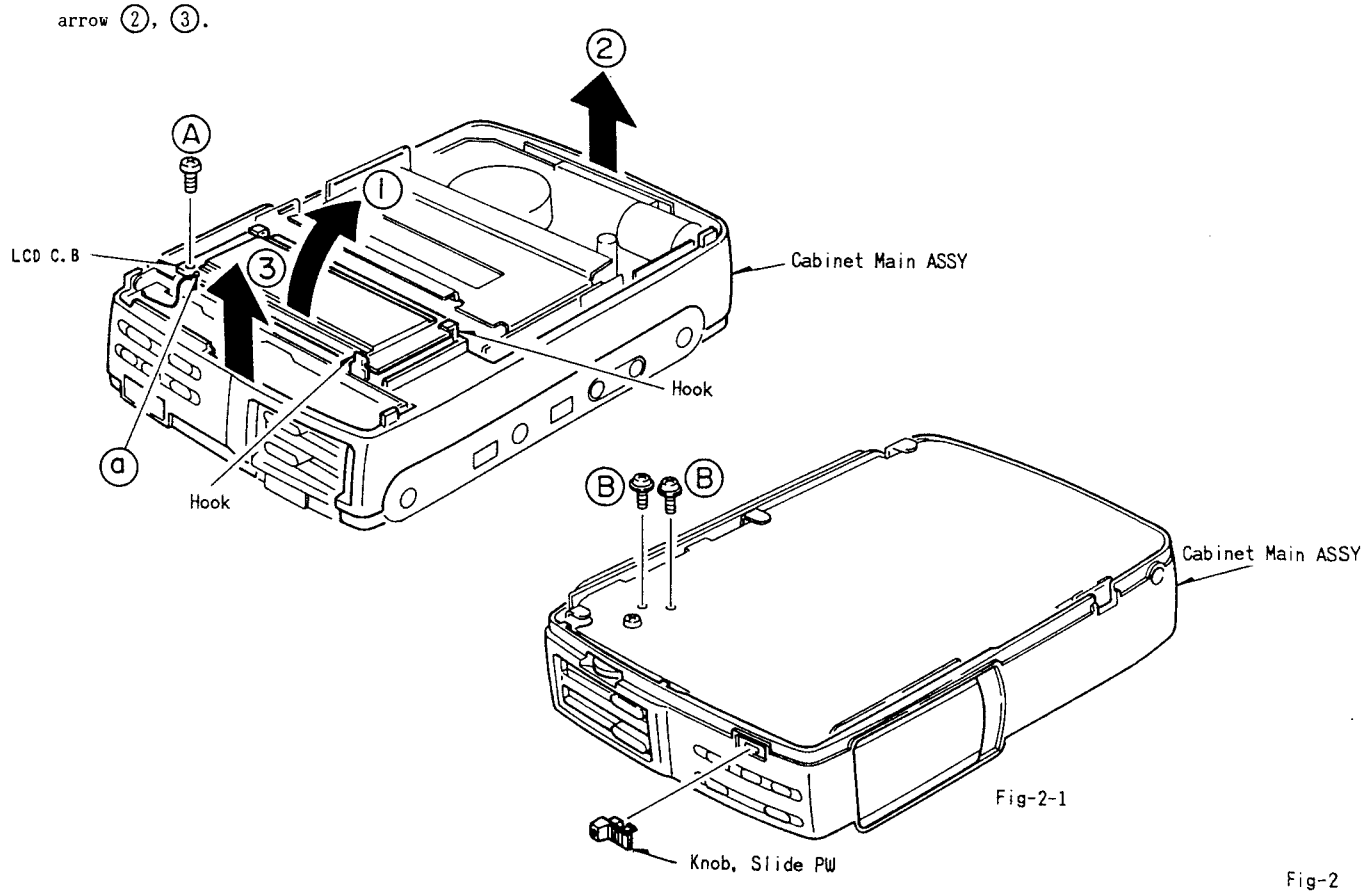


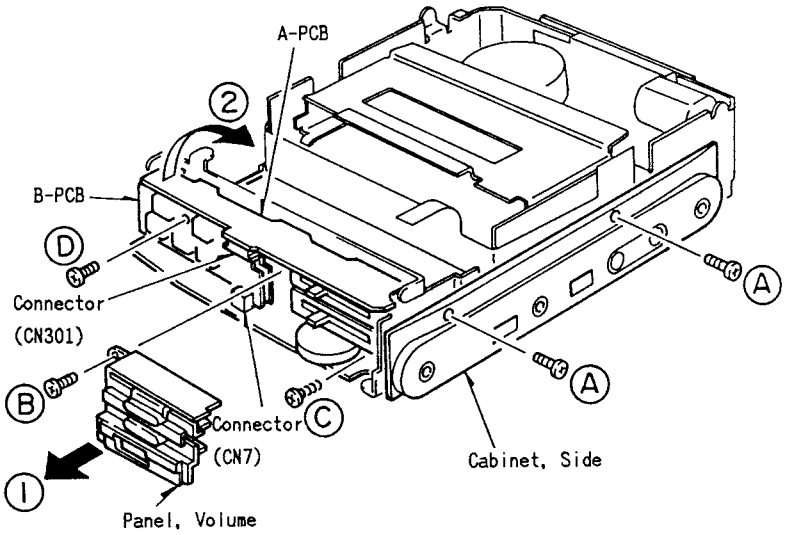
Fig-2-1

Fig-2

3. "Main Circuit Board" Removal (See Figure-3)

1) Remove 2 screws (Ⓐ) and then the "Cabinet, Side".
2) Remove screw (Ⓑ) and then the "Panel, Volume" in the direction of the arrow①.
3) Remove screw (Ⓒ) and disconnect a connector (CN301), then remove the "A-PCB" in the direction of the arrow②.
4) Remove screw (Ⓓ) and disconnect a connector (CN7), then remove the "B-PCB".
5) Remove 5 screws (Ⓔ) and disconnect the 5 connectors, then remove the "Knob, Slid SUB" and "Main Circuit Board".

Note) The "Flexible Circuit Board" is likely to be cut. Be sure to disconnect the 5 connectors first and then remove the "Main Circuit Board".



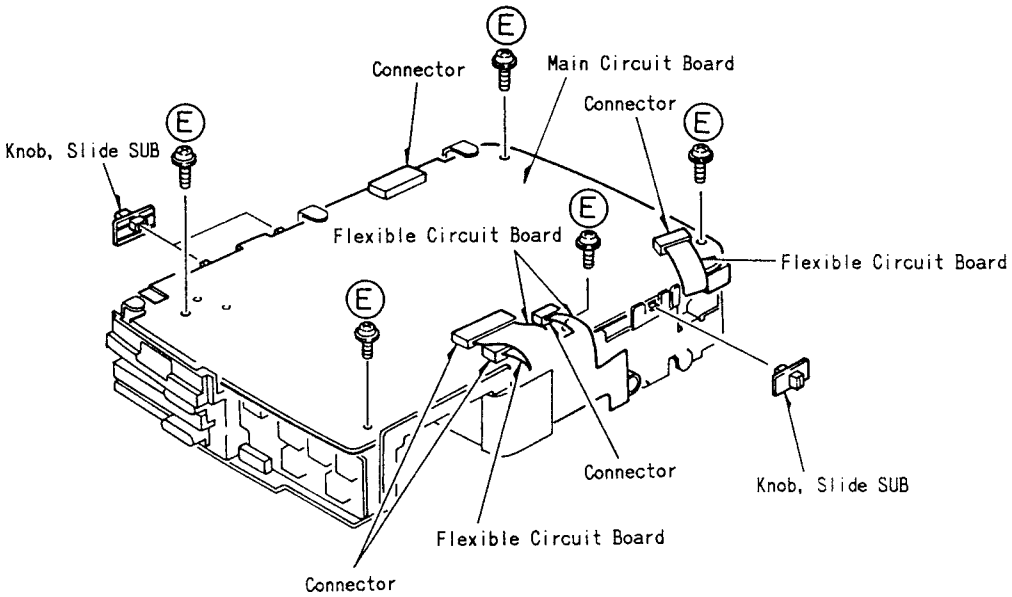


Fig-3

4. "Mechanism ASSY" Removal (See Figure-4)
   1) Remove 2 screws (Ⓐ) and the "PREAMP Circuit Board".
   2) Remove 2 screws (Ⓑ) and the "2 RECOG Switches".
   3) Remove 4 screws (Ⓒ) and then "Mechanism ASSY"in the direction of the arrow.

   Note) Be careful of the wires when removing the "Mechanism ASSY".

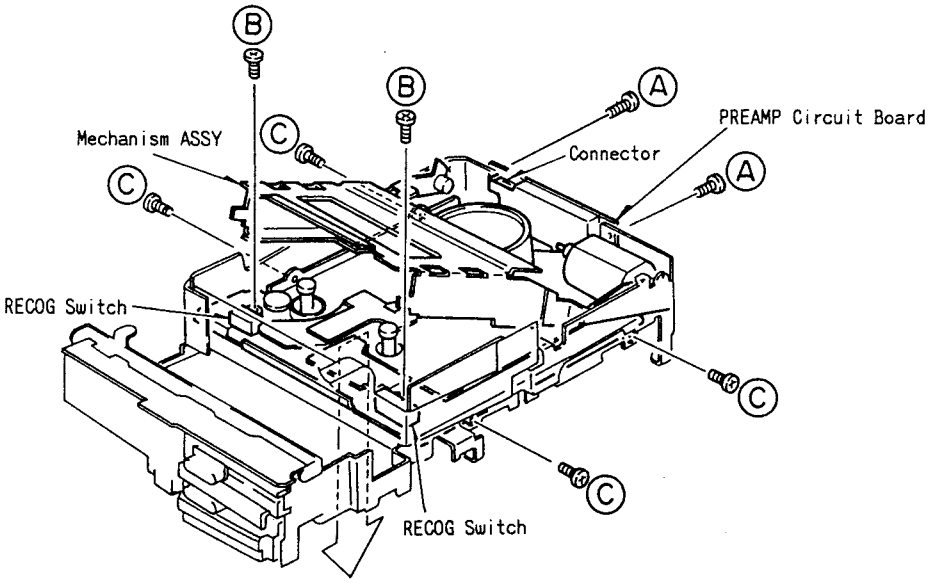
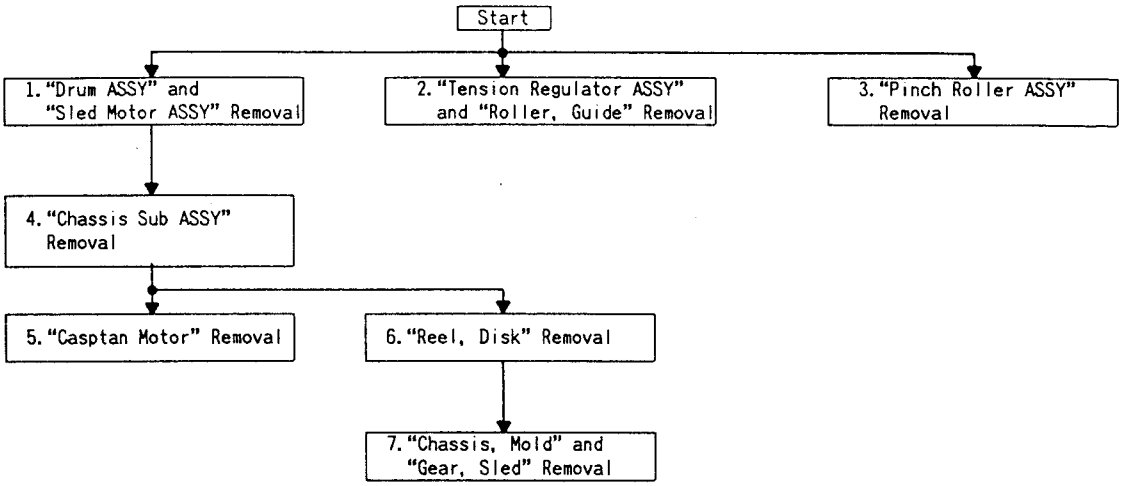


Fig-4

DISASSEMBLY INSTRUCTIONS – 2 (MECHANISM SECTION)


Start
1. "Drum ASSY" and "Sled Motor ASSY" Removal
2. "Tension Regulator ASSY" and "Roller, Guide" Removal
3. "Pinch Roller ASSY" Removal
4. "Chassis Sub ASSY" Removal
5. "Casptan Motor" Removal
6. "Reel, Disk" Removal
7. "Chassis, Mold" and "Gear, Sled" Removal

1. "Drum ASSY" and "Sled Motor ASSY" Removal (See Figure-1)
   1) Remove 3 screws (Ⓐ) and the "Drum ASSY".
   Note) Align the components in sections A, B and C as shown in the figure when attaching the "Drum ASSY".
   2) Remove screw (Ⓑ) and the "Sled Motor ASSY".
   Note) Fix the "Sled Motor ASSY" with bond.

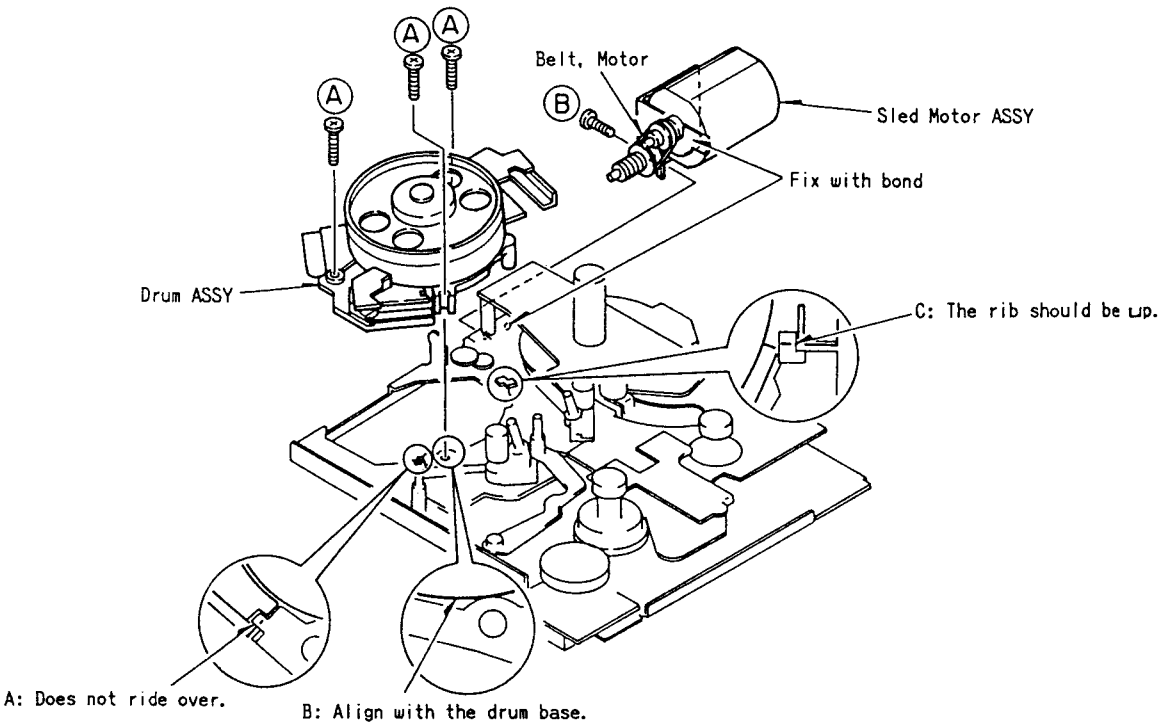


Fig-1

2. "Tension Regulator ASSY" and "Roller, Guide" Removal
(See Figure-2)

1) Remove screw ((A)) and poly washer ((B)), then remove the "Tension Regulator ASSY".

Note 1) Be careful that the "T-Spring, Tension Regulator" is also removed when the "Tension Regulator ASSY" is removed.

Note 2) Install the "T-Spring, Tension Regulator" as shown in Fig-2-1, release it from point a , and then reinstall it as shown in Fig-2-2.

2) Remove the "Flanges, UL and LT Guide" using (a) screwdriver, etc. and then remove the "Roller, L Guide" and "Roller, Lever Guide".

3) Remove 2 screws ((C)) and use a screwdriver, etc. to remove the "Rollers, Guide" of the "Shuttle ASSY T and S"

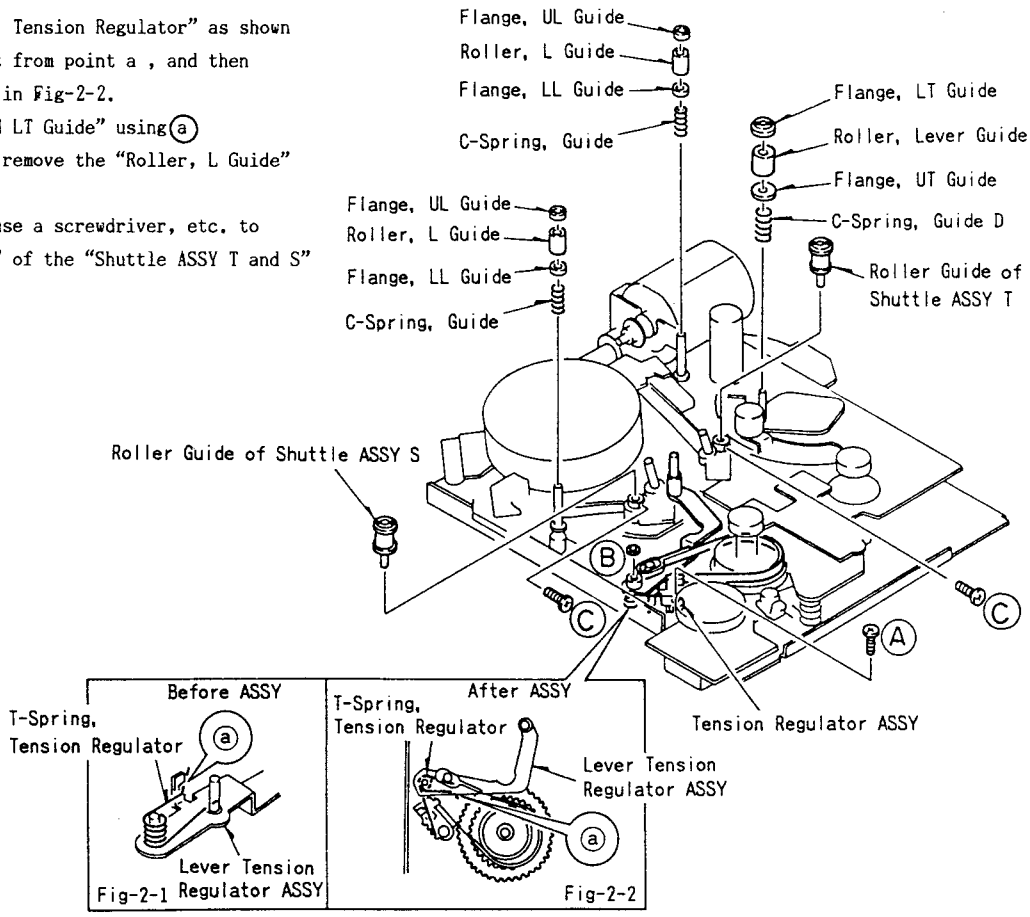


Fig-2

3. "Pinch Roller ASSY" Removal (See Figure-3)

1) Hold the "Pinch Lever ASSY" by one hand and pull out the "Pinch Roller ASSY" with the other hand in the direction of the arrow, then remove the "Pinch Roller ASSY" and "Collar, Pinch Roller B" at the same time.

Note 1) Be careful that the shaft of the "Pinch Roller ASSY" is not bent.

Note 2) Do not re-use "Collar, Pinch Roller B".

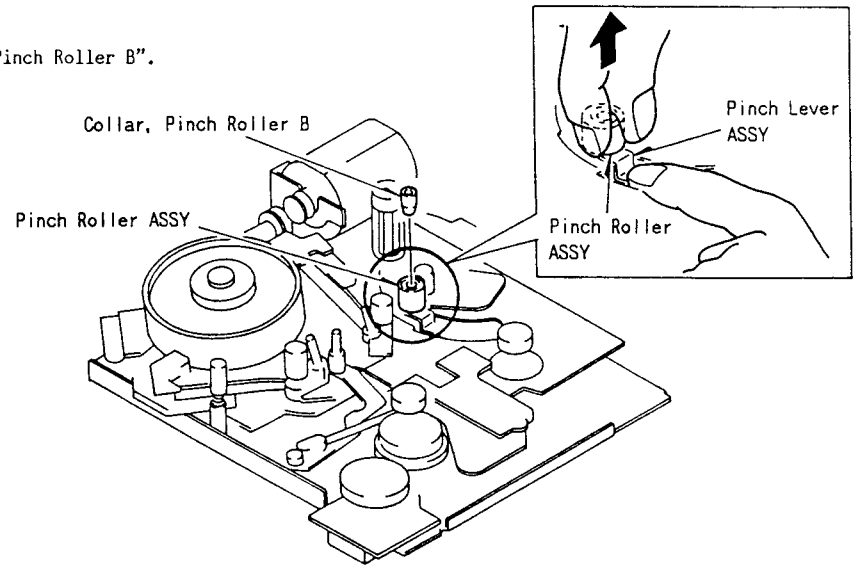


Fig-3

4. "Chassis Sub ASSY" Removal (See Figure-4)

1) Set the "Shuttle ASSY" to the Sleded end as shown in Figure-4.
2) Remove 4 screws (Ⓐ) and the "Chassis Sub ASSY". Reinstall the "Chassis Sub ASSY", taking care of the following.

Note 1) Place the hook of the "Chassis, Mold" on the "Chassis Sub ASSY" as shown in Fig-4-1.

Note 2) Align the "Idler Lever ASSY" and the hook of the "Chassis Sub ASSY" as shown in Fig-4-2.

Note 3) Align the hook of the "FR Plate ASSY" and the "T Brake Lever ASSY" as shown in Fig-4-3.

Note 4) Make the hook of the "Pinch Lever ASSY" come into contact with chassis as shown in Fig-4-4.

Note 5) Align the "Lever Guide ASSY" and "Pinch Plate ASSY" at point ⓐ as shown in Fig-4-5.

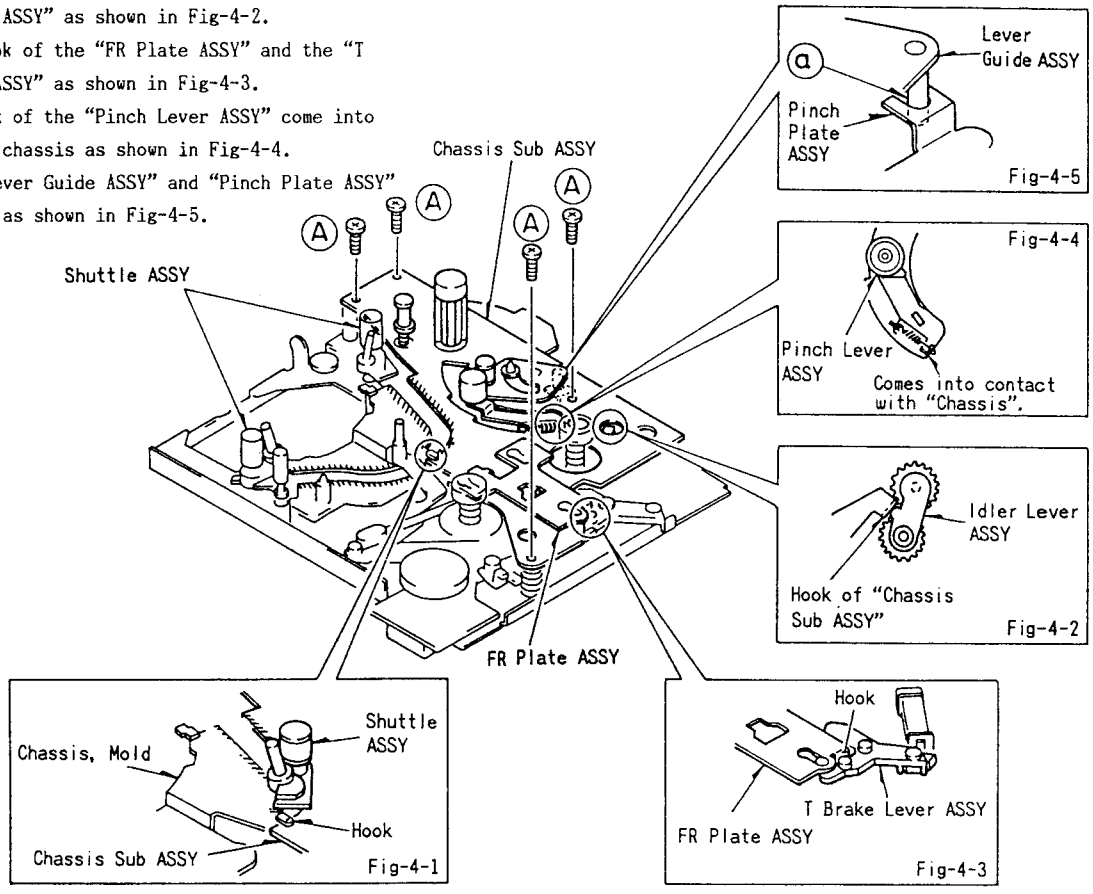


Fig-4

5. "Capstan Motor" Removal (See Figure-5)

1) Remove 3 screws (Ⓐ) and the "Capstan Motor".
2) Remove plain washer (Ⓑ) and the "Lever Guide ASSY".
3) Remove the "E-Spring, FR" and "FR Plate ASSY".
4) Remove the "T-Spring, Pinch", poly washer (Ⓒ) and the "Pinch Lever ASSY".
5) Reinstall the "T-Spring, Pinch" while bending it in the direction of the arrow as shown in Fig-5-1.

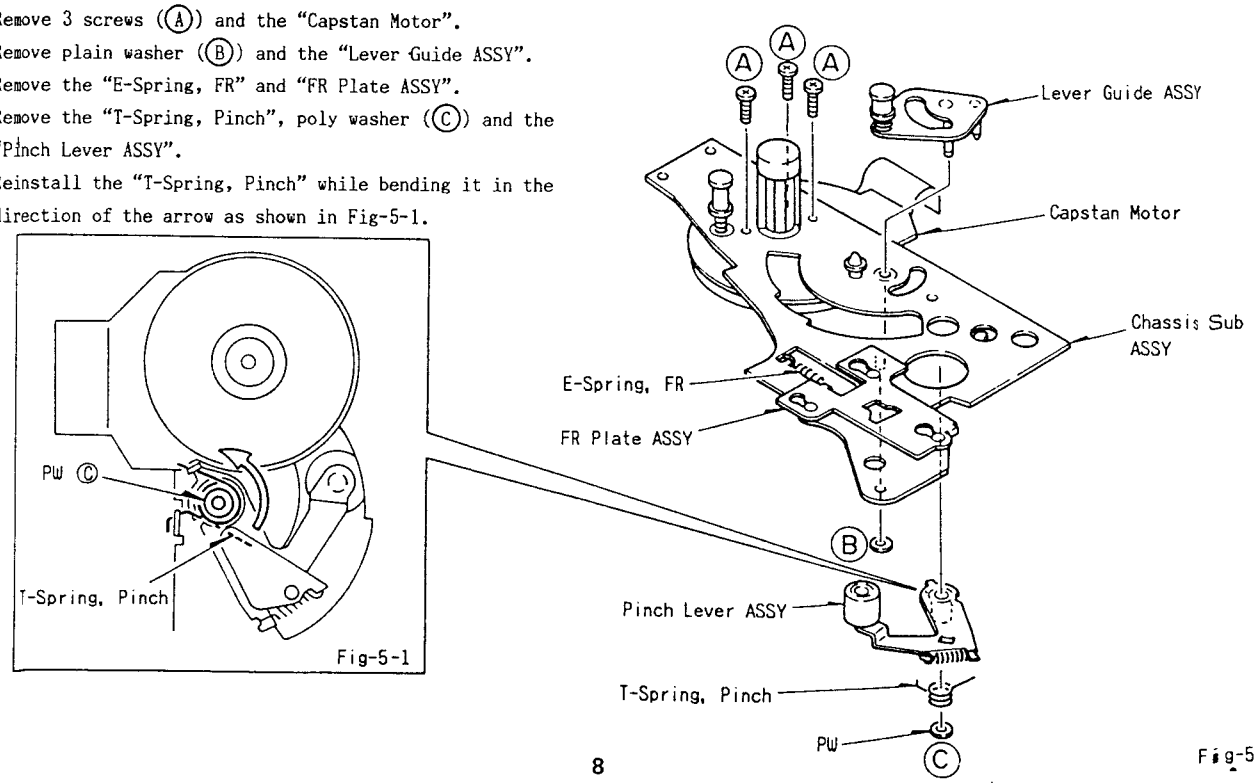


Fig-5

6. "Reel, Disk" Removal (See Figure-6)

1) Remove E-Ring (Ⓐ) and poly washer (Ⓑ), then remove the "Reel, Cap", "C-Spring, Reel" and "Reel Disk ASSY".
2) Remove poly washer (Ⓒ), "E-Spring, Brake" and then the "S Brake Lever ASSY".
3) Remove the "T-Spring, Soft" and then the "Sled Brake Lever ASSY".

Note) Hook the "T-Spring, Soft" as shown in the figure when installing the "Sled Brake Lever ASSY".

4) Remove poly washer (Ⓓ) and the "FR Gear ASSY".
5) Remove E-Ring (Ⓔ) and poly washer (Ⓕ), then remove the "Reel, Cap", "C-Spring, Reel" and "Reel, Disk S".
6) Remove poly washer (Ⓖ) and then the "T Brake Lever ASSY"and "Gear, A FF".

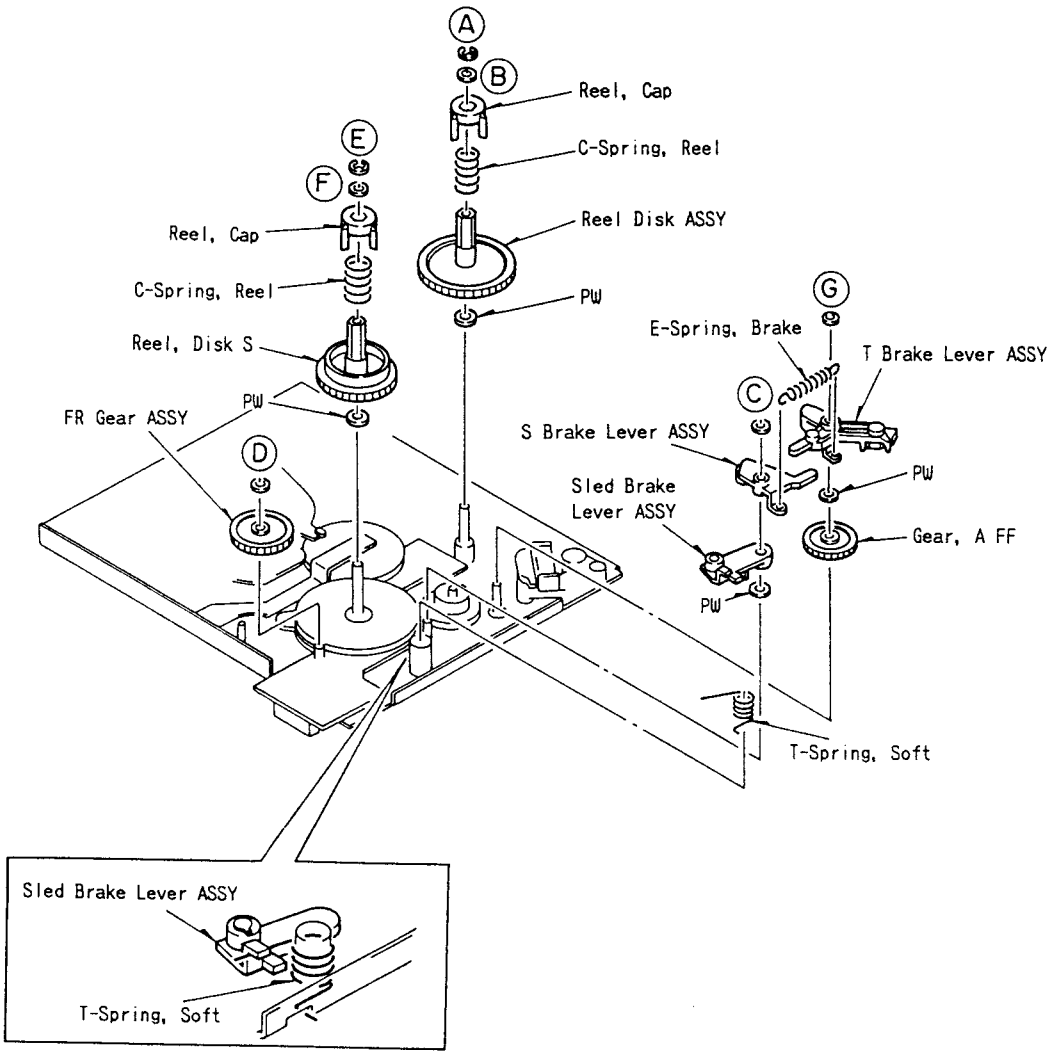


Fig-6

7. "Chassis, Mold" and "Gear, Sled" Removal (See Figure-7)
   1) While turning the "Worm Wheel" with your fingers, move the "Shuttle ASSY S and T" in the direction of the arrow. (See Fig-7-1)
   2) Remove screw (Ⓐ) and poly washer (Ⓑ), then remove the "Chassis, Mold".
   3) Remove "Gear, Sled G".
   4) Remove poly washer (Ⓒ) and then "Gear, Sled H".

   Note) When install "Gear, Sled H" and "Gear, Sled G" so that the marks on each gear are aligned as shown in Fig-7-2.

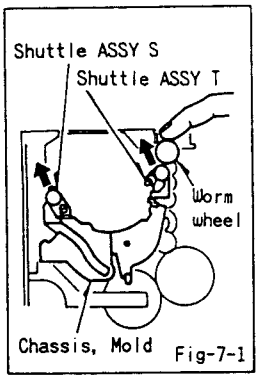


Fig-7-1

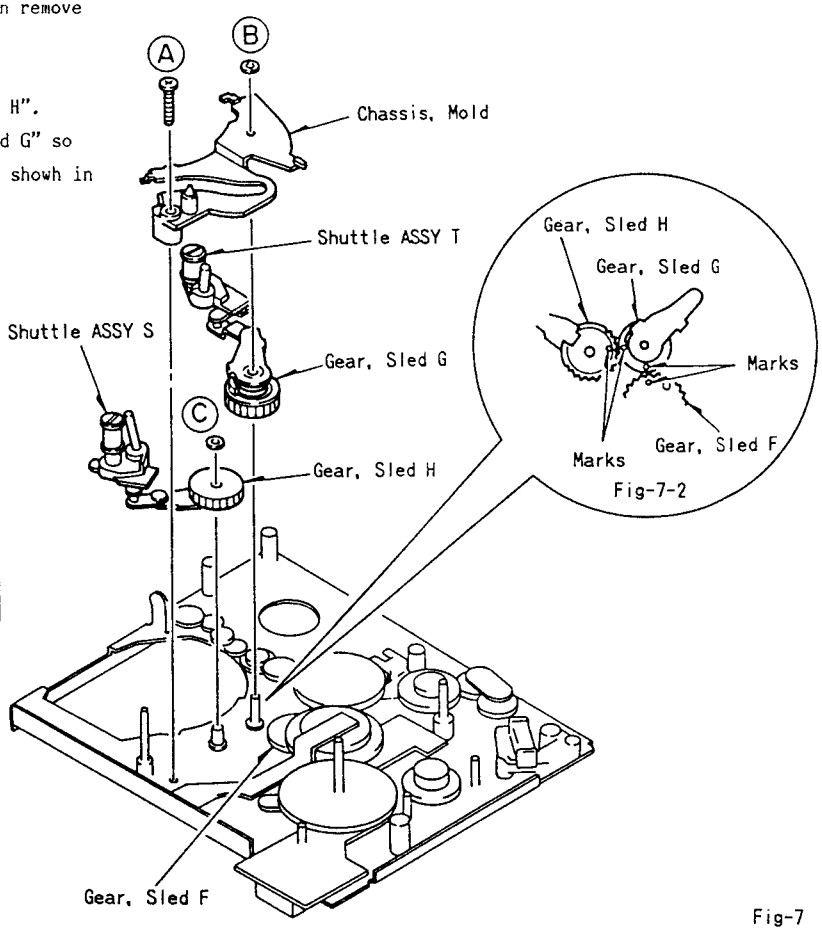


Fig-7-2

Fig-7

8. Position Alignment of Gears (See Figure-8)
   1) Align the positions of "Gear, Sled H", "Gear, Sled G", "Gear, Sled F", "Cam, A", "Cam, B" and "Mode Switch ASSY" as shown in the figure.

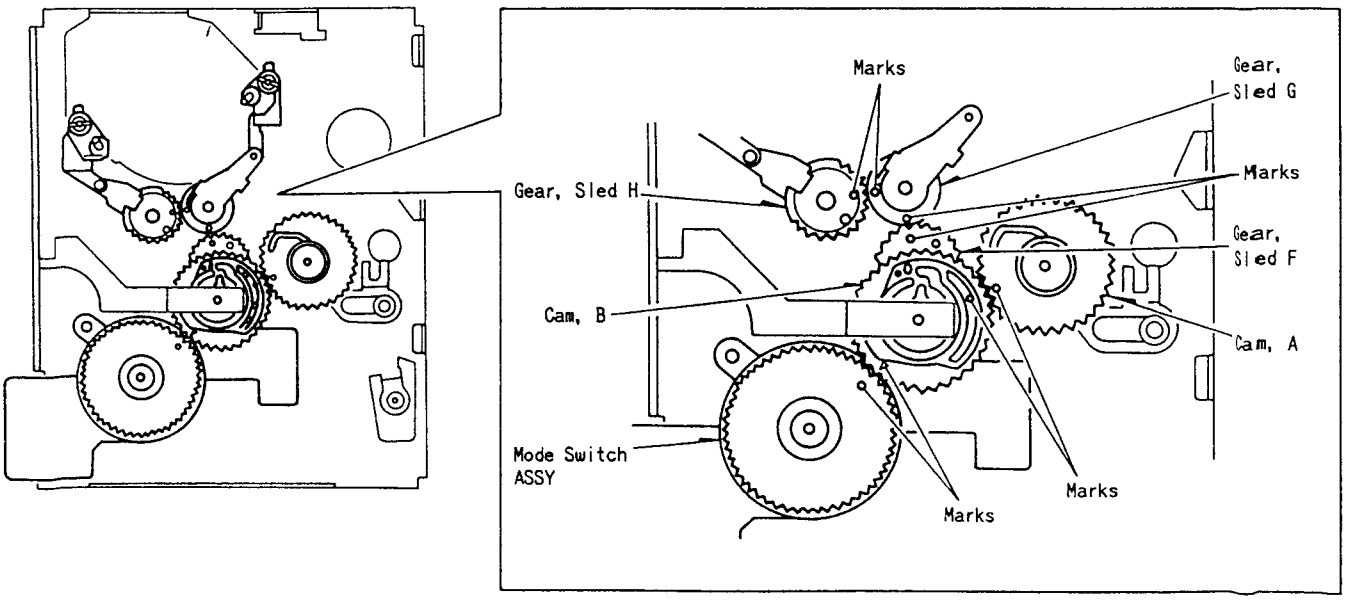


Fig-8

ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
=== IC ===		
	89-HD1-603-080	IC, HA12062AMP
	89-HD1-602-080	IC, HA12133MP
	89-HD1-633-010	IC, HD49211BFS
	89-HD1-604-010	IC, HD49212
	87-001-800-010	IC, HM65256BFP-15T
	87-001-801-080	IC, LB1631M
	87-001-797-010	IC, LC7582A
	87-001-798-080	IC, M5236ML
	87-001-793-010	IC, MN86081
	87-001-792-080	IC, NJM2100M
	87-001-802-080	IC, NJM2902M
	87-027-842-080	IC, NJM2904M
	87-001-834-080	IC, NJM3414M
	87-002-213-010	IC, SAA7322
	87-001-799-080	IC, SN74LS624NS
	87-001-803-080	IC, TA7745F
	87-001-796-080	IC, TC74HC163F
	87-001-668-080	IC, TC74HC4053AF
	87-001-795-080	IC, TC74HC74F
	87-001-604-080	IC, TC74HCU04F
	87-001-550-080	IC, TC7S04F
	89-HD1-634-010	IC, UPD75108GF-J96
=== TRANSISTOR ===		
	89-508-805-080	FET, 2SK880GR
	89-113-142-080	TRANSISTOR, 2SA1314B
	89-113-625-080	TRANSISTOR, 2SA1362GR
	89-211-821-080	TRANSISTOR, 2SB1182Q
	89-327-125-080	TRANSISTOR, 2SC2712GR
	89-341-164-080	TRANSISTOR, 2SC4116Y
	89-342-132-080	TRANSISTOR, 2SC4213B
	87-026-331-080	TRANSISTOR, DTA114YU
	87-026-342-080	TRANSISTOR, DTC144EU
	87-026-419-080	TRANSISTOR, RN2301
=== DIODES ===		
	87-001-165-080	DIODE, CHIP 1SS300
	87-001-166-080	DIODE, CHIP 1SS301
	87-001-836-080	DIODE, CHIP UIGWJ49
	87-020-583-080	DIODE, ZENER CHIP 02CZ5.1Y
=== MAIN CIRCUIT BOARD SECTION ===		
C1	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C2	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C3	★87-012-285-080	CAP, CHIP SS 8200P-50 B
C4	★87-012-176-080	CAP, CHIP SS 15P-50 CH
C5	★87-012-360-080	CAP, CHIP S 1-10 FZ
C6	★87-010-606-080	CAP, CHIP ELECT 22-6.3
C7	★87-012-172-080	CAP, CHIP SS 10P-50 CH
C8	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C9	★87-012-180-080	CAP, CHIP SS 22P-50 CH
C10	★87-010-196-080	CAP, CHIP S 0.1-25 F
C11	★87-012-174-080	CAP, CHIP SS 12P-50 CH
C12	★87-012-174-080	CAP, CHIP SS 12P-50 CH
C13	★87-012-174-080	CAP, CHIP SS 12P-50 CH
C14	★87-012-174-080	CAP, CHIP SS 12P-50 CH
C15	★87-010-196-080	CAP, CHIP S 0.1-25 F
C16	★87-010-730-080	CAP, CHIP ELECT 10-6.3
C17	★87-010-730-080	CAP, CHIP ELECT 10-6.3
C18	★87-010-318-080	CAP, CHIP S 47P-50 CH
C19	★87-010-318-080	CAP, CHIP S 47P-50 CH
C20	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C21	★87-012-193-080	CAP, CHIP SS 82P-50 CH
C22	★87-010-196-080	CAP, CHIP S 0.1-25 F
C23	★87-010-606-080	CAP, CHIP ELECT 22-6.3
C25	★87-010-771-080	CAP, CHIP TANTALUM 47-6.3
C26	★87-010-196-080	CAP, CHIP S 0.1-25 F
C27	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C28	★87-010-196-080	CAP, CHIP S 0.1-25 F
C29	★87-010-665-080	CAP, CHIP ELECT 47-6.3
C30	★87-010-196-080	CAP, CHIP S 0.1-25 F
C31	★87-010-665-080	CAP, CHIP ELECT 47-6.3
C32	★87-010-196-080	CAP, CHIP S 0.1-25 F
C33	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C34	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C35	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C36	★87-010-596-080	CAP, CHIP S 0.047-16 RK
C37	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C38	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C39	★87-012-180-080	CAP, CHIP SS 22P-50 CH
C40	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C41	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C42	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C43	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C44	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C45	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C46	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C47	★87-012-281-080	CAP, CHIP SS 3900P-50 B
C48	★87-012-285-080	CAP, CHIP SS 8200P-50 B
C49	★87-012-281-080	CAP, CHIP SS 3900P-50 B
C50	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C51	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C52	★87-012-196-080	CAP, CHIP SS 120P-50 CH
C53	★87-012-278-080	CAP, CHIP SS 2200P-50 B
C54	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C55	★87-010-196-080	CAP, CHIP S 0.1-25 F
C56	★87-010-510-080	CAP, CHIP TANTALUM 4.7-10
C57	★87-010-789-080	CAP, CHIP MYLAR 0.022J
C58	★87-012-360-080	CAP, CHIP S 1-10 FZ
C59	★87-010-196-080	CAP, CHIP S 0.1-25 F
C60	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C61	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C62	★87-010-196-080	CAP, CHIP S 0.1-25 F
C63	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C64	★87-010-196-080	CAP, CHIP S 0.1-25 F
C65	★87-010-194-080	CAP, CHIP S 0.047-25 F
C66	★87-012-282-080	CAP, CHIP SS 4700P-50 B
C67	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C68	★87-012-360-080	CAP, CHIP S 1-10 FZ
C69	★87-012-360-080	CAP, CHIP S 1-10 FZ
C70	★87-010-776-080	CAP, CHIP MYLAR 0.15-25J
C71	★87-010-781-080	CAP, CHIP ELECT 3.3-6.3 BP
C72	★87-012-360-080	CAP, CHIP S 1-10 FZ
C73	★87-010-775-080	CAP, CHIP MYLAR 0.068-25J
C74	★87-010-772-080	CAP, CHIP MYLAR 2200P-25J
C75	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C76	★87-010-774-080	CAP, CHIP MYLAR 0.047-25J
C77	★87-010-772-080	CAP, CHIP MYLAR 2200P-25J
C78	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C79	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C80	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C81	★87-010-730-080	CAP, CHIP ELECT 10-6.3
C82	★87-010-730-080	CAP, CHIP ELECT 10-6.3
C83	★87-010-730-080	CAP, CHIP ELECT 10-6.3
C84	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C85	★87-012-195-080	CAP, CHIP SS 100P-50 CH

REF. NO.	PART NO.	DESCRIPTION
C86	★87-012-360-080	CAP, CHIP S 1-10 FZ
C87	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C88	★87-012-360-080	CAP, CHIP S 1-10 FZ
C89	★87-012-360-080	CAP, CHIP S 1-10 FZ
C90	★87-010-510-080	CAP, CHIP TANTALUM 4.7-10
C91	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C92	★87-012-182-080	CAP, CHIP SS 27P-50 CH
C93	★87-012-182-080	CAP, CHIP SS 27P-50 CH
C94	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C95	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C96	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C97	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C98	★87-012-142-080	CAP, CHIP S 0.33-16 F
C99	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C100	★87-010-779-080	CAP, CHIP ELECT 100-6.3
C101	★87-012-142-080	CAP, CHIP S 0.33-16 F
C102	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C103	★87-010-779-080	CAP, CHIP ELECT 100-6.3
C105	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C106	★87-010-769-080	CAP, CHIP TANTALUM 6.8-10
C107	★87-010-196-080	CAP, CHIP S 0.1-25 F
C108	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C109	★87-010-196-080	CAP, CHIP S 0.1-25 F
C110	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C111	★87-010-196-080	CAP, CHIP S 0.1-25 F
C112	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C113	★87-010-196-080	CAP, CHIP S 0.1-25 F
C114	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C115	★87-010-196-080	CAP, CHIP S 0.1-25 F
C116	★87-010-175-080	CAP, CHIP S 560P-50 SL
C117	★87-012-276-080	CAP, CHIP SS 1500P-50 B
C118	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C119	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C120	★87-010-196-080	CAP, CHIP S 0.1-25 F
C121	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C122	★87-010-196-080	CAP, CHIP S 0.1-25 F
C123	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C124	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C125	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C126	★87-010-175-080	CAP, CHIP S 560P-50 SL
C127	★87-012-276-080	CAP, CHIP SS 1500P-50 B
C128	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C129	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C130	★87-012-274-080	CAP, CHIP SS 1000P-50 B
C131	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C132	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C133	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C134	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C135	★87-010-770-080	CAP, CHIP TANTALUM 100-4
C136	★87-010-196-080	CAP, CHIP S 0.1-25 F
C137	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C138	★87-010-424-080	CAP, CHIP TANTALUM 4.7-4
C139	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C140	★87-010-770-080	CAP, CHIP TANTALUM 100-4
C141	★87-010-196-080	CAP, CHIP S 0.1-25 F
C142	★87-010-522-080	CAP, CHIP TANTALUM 2.2-10
C143	★87-010-196-080	CAP, CHIP S 0.1-25 F
C146	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C147	★87-010-664-080	CAP, CHIP ELECT 47-4 MV
C148	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C149	★87-010-609-080	CAP, CHIP ELECT 220-4
C150	★87-012-199-080	CAP, CHIP SS 220P-50 CH
C151	★87-010-746-080	CAP, CHIP TANTALUM 10-4
C152	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C153	★87-010-664-080	CAP, CHIP ELECT 47-4 MV
C154	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C155	★87-010-609-080	CAP, CHIP ELECT 220-4
C156	★87-012-199-080	CAP, CHIP SS 220P-50 CH
C157	★87-010-746-080	CAP, CHIP TANTALUM 10-4
C158	★87-010-609-080	CAP, CHIP ELECT 220-4
C159	★87-010-609-080	CAP, CHIP ELECT 220-4
C160	★87-010-609-080	CAP, CHIP ELECT 220-4
C161	★87-010-609-080	CAP, CHIP ELECT 220-4
C162	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C163	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C164	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C165	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C166	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C167	★87-012-188-080	CAP, CHIP SS 47P-50 CH
C168	★87-012-360-080	CAP, CHIP S 1-10 FZ
C170	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C171	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C172	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C173	★87-012-360-080	CAP, CHIP S 1-10 FZ
C174	★87-012-141-080	CAP, CHIP S 0.22-16 F
C175	★87-012-196-080	CAP, CHIP SS 120P-50 CH
C176	★87-012-286-080	CAP, CHIP SS 0.01-25 B
C177	★87-012-360-080	CAP, CHIP S 1-10 FZ
C178	★87-012-199-080	CAP, CHIP SS 220P-50 CH
C179	★87-012-336-080	CAP, CHIP SS 330P-50 SL
C180	★87-012-336-080	CAP, CHIP SS 330P-50 SL
J2	87-049-767-010	JACK, 3.5(MIC)
J3	87-049-767-010	JACK, 3.5(LINE IN)
J4	87-049-724-080	JACK, DIA3.5(BLK)(LINE OUT)
J5	87-049-724-080	JACK, DIA3.5(BLK)(DIGITAL I/O)
J6	★87-049-859-080	JACK, DC REFLOW BLK(CD 6.9V)
L1	★87-005-298-080	COIL, 10UH
L2	★87-005-298-080	COIL, 10UH
L3	★87-005-286-080	COIL, 1UH
L4	★89-HD1-612-080	COIL, S5CDLN-141AN
L5	★87-005-407-080	COIL, BLM41A04
L6	★87-005-310-080	COIL, 100UH
L7	★89-HD1-607-080	COIL, 303AN-1531AQVC0
L8	★89-HD1-608-080	FILTER, A365LNG-1391
L9	★89-HD1-609-080	FILTER, H366BNJ-1232YPD
L10	★87-005-294-080	COIL, 4.7UH
L11	★87-005-512-080	COIL, BLM21A05
L12	★87-005-512-080	COIL, BLM21A05
L13	★87-003-241-080	COIL, S 4.7UH
L14	★87-005-512-080	COIL, BLM21A05
L15	★87-005-512-080	COIL, BLM21A05
L16	★87-005-512-080	COIL, BLM21A05
L17	★87-005-512-080	COIL, BLM21A05
L18	★87-005-512-080	COIL, BLM21A05
L19	★87-005-512-080	COIL, BLM21A05
L20	★87-005-512-080	COIL, BLM21A05
L21	★87-005-512-080	COIL, BLM21A05
L22	★87-005-512-080	COIL, BLM21A05
L23	★87-005-512-080	COIL, BLM21A05
L24	★87-005-512-080	COIL, BLM21A05
L25	★87-005-512-080	COIL, BLM21A05
L26	★87-005-512-080	COIL, BLM21A05
L28	★87-005-407-080	COIL, BLM41A04
L29	★87-005-407-080	COIL, BLM41A04
L30	★87-005-407-080	COIL, BLM41A04
L31	★87-005-512-080	COIL, BLM21A05
L32	★87-005-512-080	COIL, BLM21A05
SFR1	★87-024-407-080	SFR, 10K

E

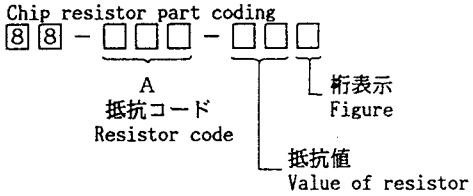
REF. NO.	PART NO.	DESCRIPTION
SFR2	★87-024-407-080	SFR, 10K
SFR3	★87-024-335-080	SFR, 100K
SFR4	★87-024-334-080	SFR, 3. 3K
SW1	87-036-219-010	SLIDE SW(POWER)
SW2	87-036-145-080	SLIDE SW(MIC ATT)
SW3	87-036-123-080	SLIDE SW(INPUT D, A)
SW4	87-036-123-080	SLIDE SW(KEY HOLD)
SW5	87-036-191-080	PUSH SW(CASSETTE DET.)
VOL1	80-HD1-616-080	VOLUME, 20KC(VOLUME)
X1	★87-030-190-010	XTAL RESONATOR 37. 632MHZ
X2	★87-030-147-010	XTAL RESONATOR 24. 576MHZ
X3	★87-030-146-010	XTAL RESONATOR 22. 5792MHZ
X4	★87-030-215-080	VIB, CER 4. 19MGC
::: PRE AMP CIRCUIT BOARD SECTION :::		
C1	★87-010-771-080	CAP, CHIP TANTALUM 47-6. 3
C2	★87-010-771-080	CAP, CHIP TANTALUM 47-6. 3
C3	★87-010-196-080	CAP, CHIP S 0. 1-25 F
C4	★87-010-196-080	CAP, CHIP S 0. 1-25 F
C5	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C6	★87-010-505-080	CAP, CHIP TANTALUM 1-16
C7	★87-010-196-080	CAP, CHIP S 0. 1-25 F
C8	★87-010-196-080	CAP, CHIP S 0. 1-25 F
C9	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C10	★87-010-515-080	CAP, CHIP TANTALUM 22-6. 3
C11	★87-012-193-080	CAP, CHIP SS 82P-50 CH
C12	★87-012-193-080	CAP, CHIP SS 82P-50 CH
C13	★87-012-282-080	CAP, CHIP SS 4700P-50 B
C14	★87-012-282-080	CAP, CHIP SS 4700P-50 B
C15	★87-012-280-080	CAP, CHIP SS 3300P-50 B
C16	★87-012-280-080	CAP, CHIP SS 3300P-50 B
C17	★87-012-280-080	CAP, CHIP SS 3300P-50 B
C18	★87-012-280-080	CAP, CHIP SS 3300P-50 B
C19	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C20	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C21	★87-010-787-080	CAP, CHIP SS 0. 022-25 B
C22	★87-010-787-080	CAP, CHIP SS 0. 022-25 B
C23	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C24	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C25	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C26	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C27	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C28	★87-012-199-080	CAP, CHIP SS 220P-50 CH
C29	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C30	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C31	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C32	★87-012-275-080	CAP, CHIP SS 1200P-50 B
C33	★87-012-182-080	CAP, CHIP SS 27P-50 CH
C34	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C35	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C36	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C37	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
C38	★87-012-286-080	CAP, CHIP SS 0. 01-25 B
L1	★87-005-310-080	COIL, 100UH
L2	★87-005-310-080	COIL, 100UH
VR1	★87-024-310-080	SFR, 2. 2K
VR2	★87-024-310-080	SFR, 2. 2K
VR3	★87-024-221-010	SFR, 1K
::: FRONT CIRCUIT BOARD SECTION :::		
C201	★87-012-272-080	CAP, CHIP SS 680P-50 B
C202	★87-010-759-080	CAP, CHIP S 0. 1-25 F
LCD201	80-HD1-611-010	LCD, LD-B5218 AZ(DISPLAY)

REF. NO.	PART NO.	DESCRIPTION
::: A/D CONVERTER CIRCUIT BOARD SECTION :::		
C110	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C112	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C112	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C114	★87-012-198-080	CAP, CHIP SS 180P-50 CH
C116	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C118	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C120	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C124	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C126	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C128	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C129	★87-010-424-080	CAP, CHIP TANTALUM 4. 7-4
C130	★87-010-522-080	CAP, CHIP TANTALUM 2. 2-10
C131	★87-010-505-080	CAP, CHIP TANTALUM 1-16
::: SWITCH CIRCUIT BOARD SECTION :::		
SW1	87-030-152-080	TACT SW(ID ERASE)
SW4	87-030-152-080	TACT SW(ID MARK)
SW8	87-030-152-080	TACT SW(RENUMBER)
SW9	87-030-152-080	TACT SW(AARS/RESET)
SW10	87-030-152-080	TACT SW(DISPLAY)
::: VOL. CIRCUIT BOARD SECTION :::		
C101	★87-010-769-080	CAP, CHIP TANTALUM 6. 8-10
C103	★87-010-424-080	CAP, CHIP TANTALUM 4. 7-4
C104	★87-010-424-080	CAP, CHIP TANTALUM 4. 7-4
C105	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C106	★87-012-195-080	CAP, CHIP SS 100P-50 CH
C107	★87-010-746-080	CAP, CHIP TANTALUM 10-4
C108	★87-010-746-080	CAP, CHIP TANTALUM 10-4
C109	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C111	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C113	★87-012-198-080	CAP, CHIP SS 180P-50 CH
C115	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C117	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C119	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C121	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C123	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C125	★87-012-142-080	CAP, CHIP S 0. 33-16 F
C127	★87-012-142-080	CAP, CHIP S 0. 33-16 F
VR101	80-HD1-614-010	VOLUME, 20KA(REC LEVEL L)
VR102	80-HD1-614-010	VOLUME, 20KA(REC LEVEL R)
::: FRONT SWITCH CIRCUIT BOARD SECTION :::		
SW2	87-030-152-080	TACT SW(STOP/EJECT)
SW3	87-030-152-080	TACT SW(PLAY PAUSE)
SW5	87-030-152-080	TACT SW(RECORD)
SW6	87-030-152-080	TACT SW(F FWD/F SKIP)
SW7	87-030-152-080	TACT SW(REW/B SKIP)
::: MECHA CIRCUIT BOARD SECTION (FLEXIBLE P. C. B) :::		
PCB-H	★80-HD1-602-010	MECHA. FLEXIBLE CIRCUIT BOARD
CP1	89-HD1-613-110	PHOTO SENSOR, GP2L20L(TOP SENSOR)
CP2	89-HD1-613-110	PHOTO SENSOR, GP2L20L(END SENSOR)
DS1	80-HD1-626-110	TUBEH-S 20-45 BLK(DEW SENSOR)
SW1	86-544-608-010	PUSH SW(RECOG SW L)
SW2	86-571-605-010	PUSH SW(RECOG SW R)
::: DRUM FLEX. CIRCUIT BOARD SECTION :::		
PCB-I	★80-HD1-610-010	DRAM FLEX. CIRCUIT BOARD
	86-571-603-110	DRUM ASSY(DOU-02F)
::: JACK FLEX. CIRCUIT BOARD SECTION :::		

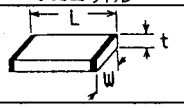
REF. NO.	PART NO.	DESCRIPTION
PCB-J	★80-HK4-604-010	JACK FLEX. CIRCUIT BOARD
J1	87-009-218-010	JACK, 3.5 BK(PHONES)
=== MISCELLANEOUS ===		
	86-571-606-010	MODE SWITCH ASSY
	86-544-610-010	POSITION SENSOR
M1	86-571-601-010	CAPSTAN MOTOR ASSY
M2	86-571-384-010	SELD MOTOR ASSY
SOL1	86-571-609-010	SOLENOID(BRAKE)

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち
Chip resistor part coding

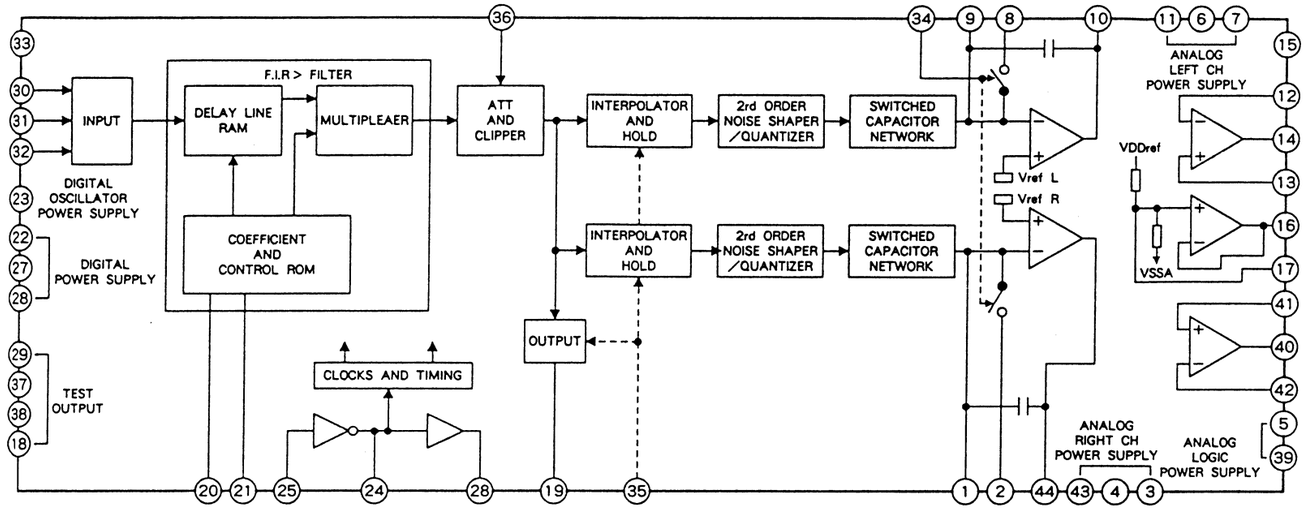


チップ抵抗
Chip resistor

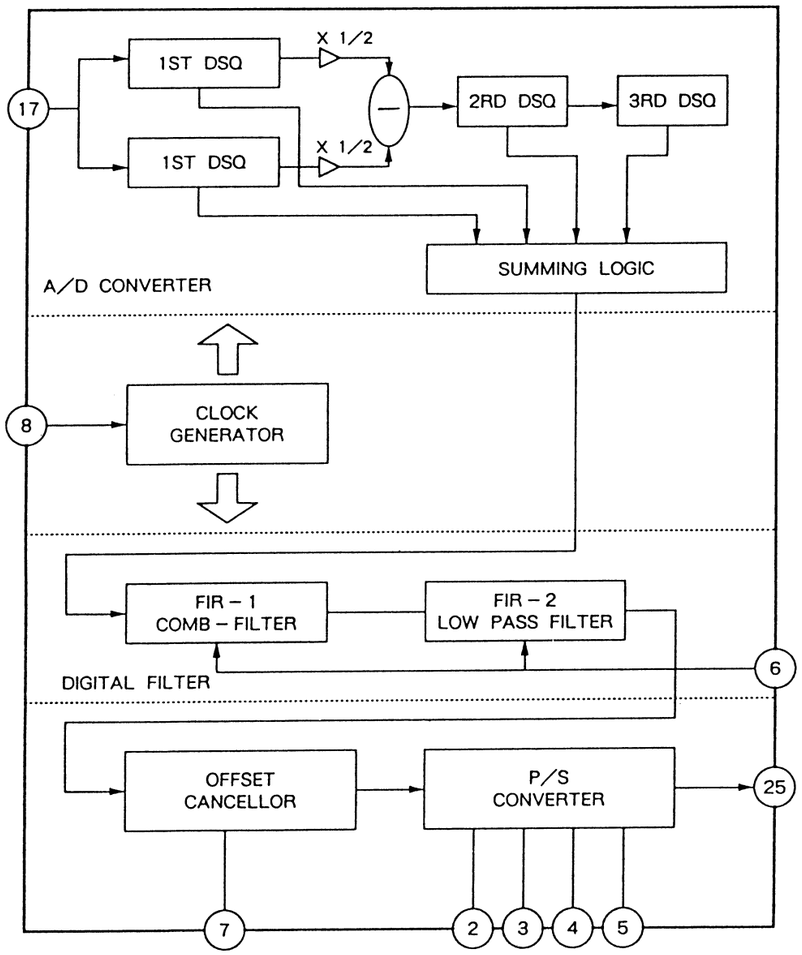
Wattage 容量	Type 種類	Tolerance 許容誤差	Symbol 記号	Dimensions／寸法(mm) Form/外形	L	W	t	Resistor Code : A 抵抗コード : A
1/32W	1608	±5%	CJ		1.6	0.8	0.35	108
1/10W	2125	±5%	CJ		2	1.25	1.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.5 ～0.7	128

IC BLOCK DIAGRAM – 1

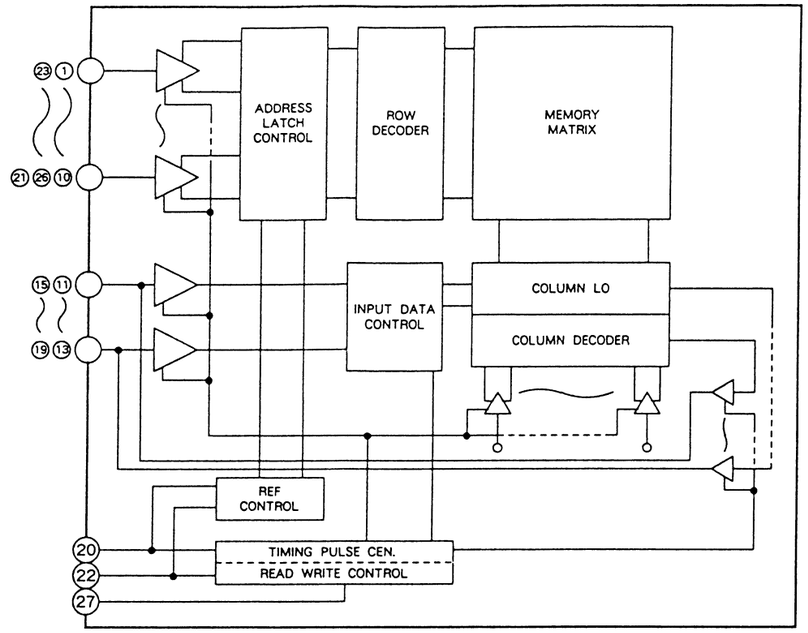
IC,SAA7322



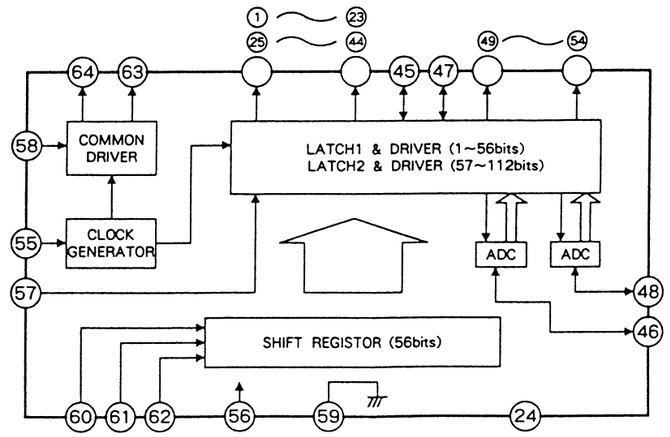
IC,MN86081



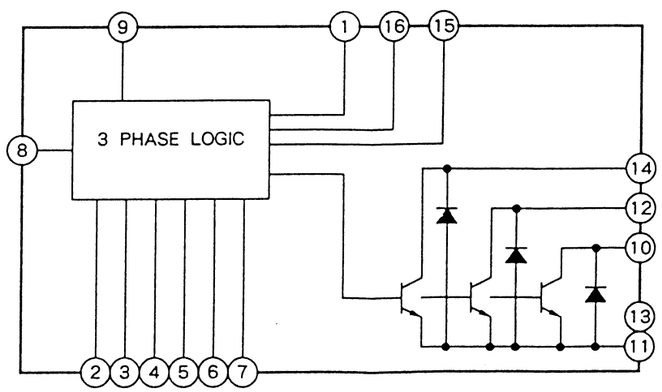
IC,HM65256BFP



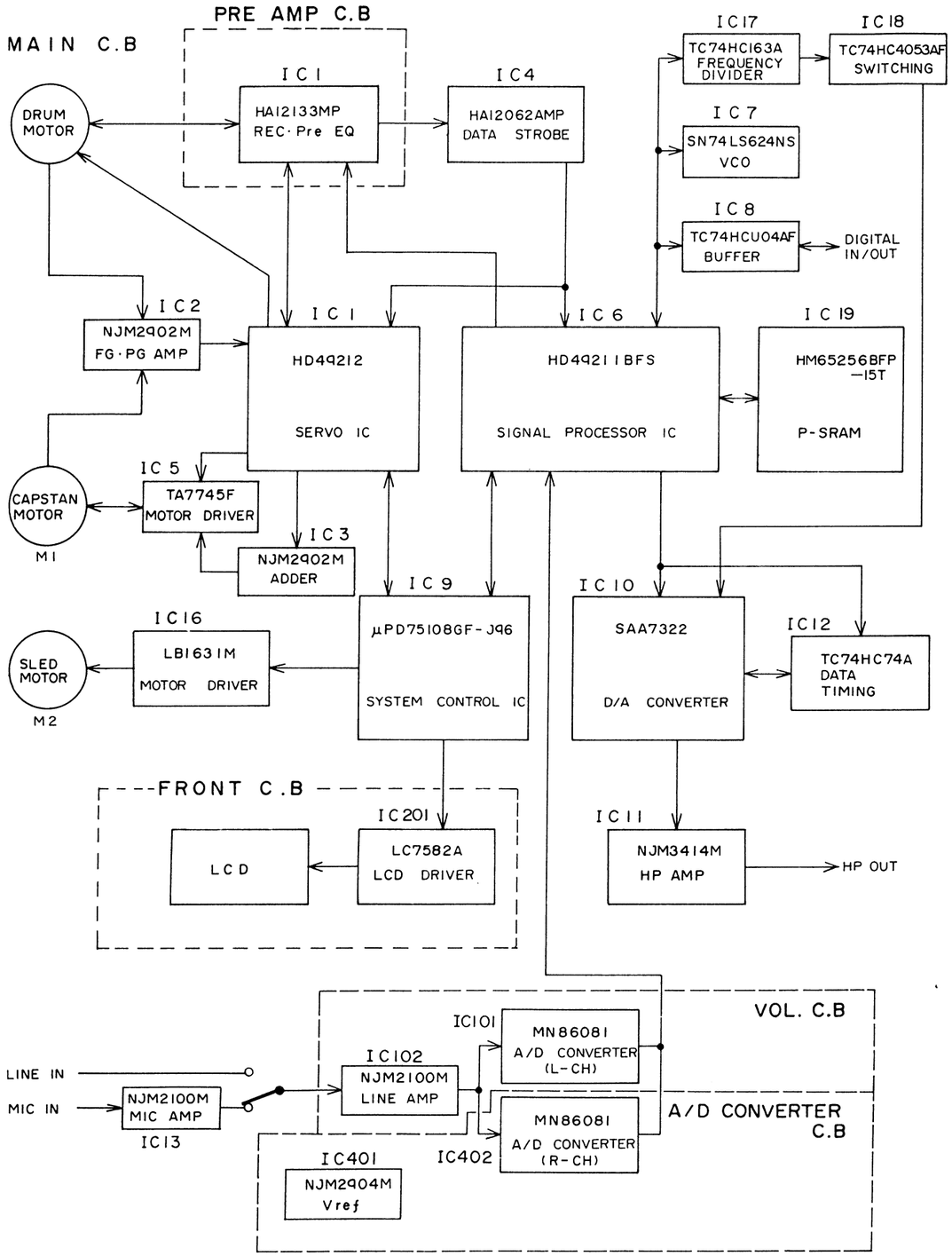
IC,LC7582A



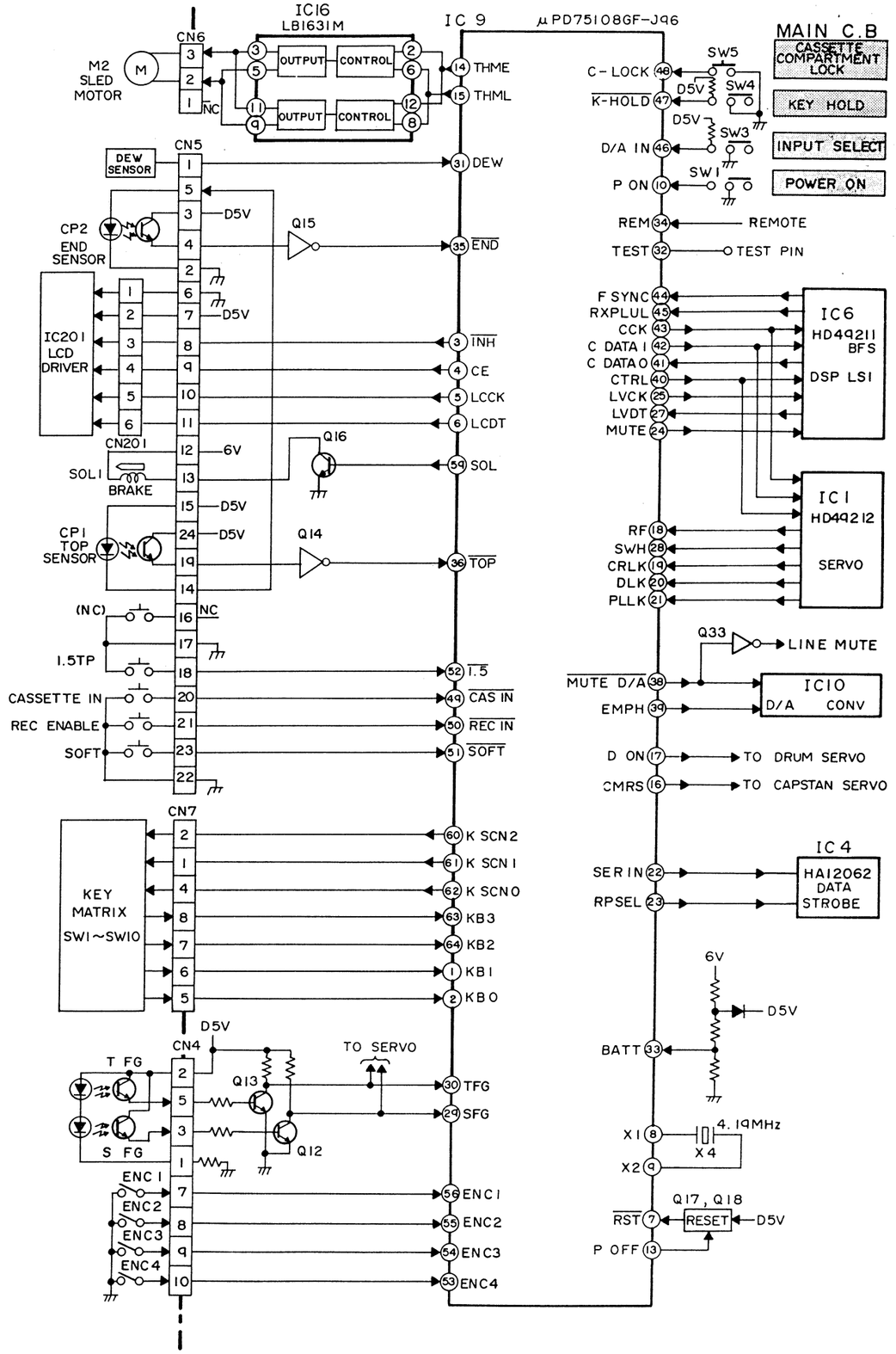
IC,TA7745F



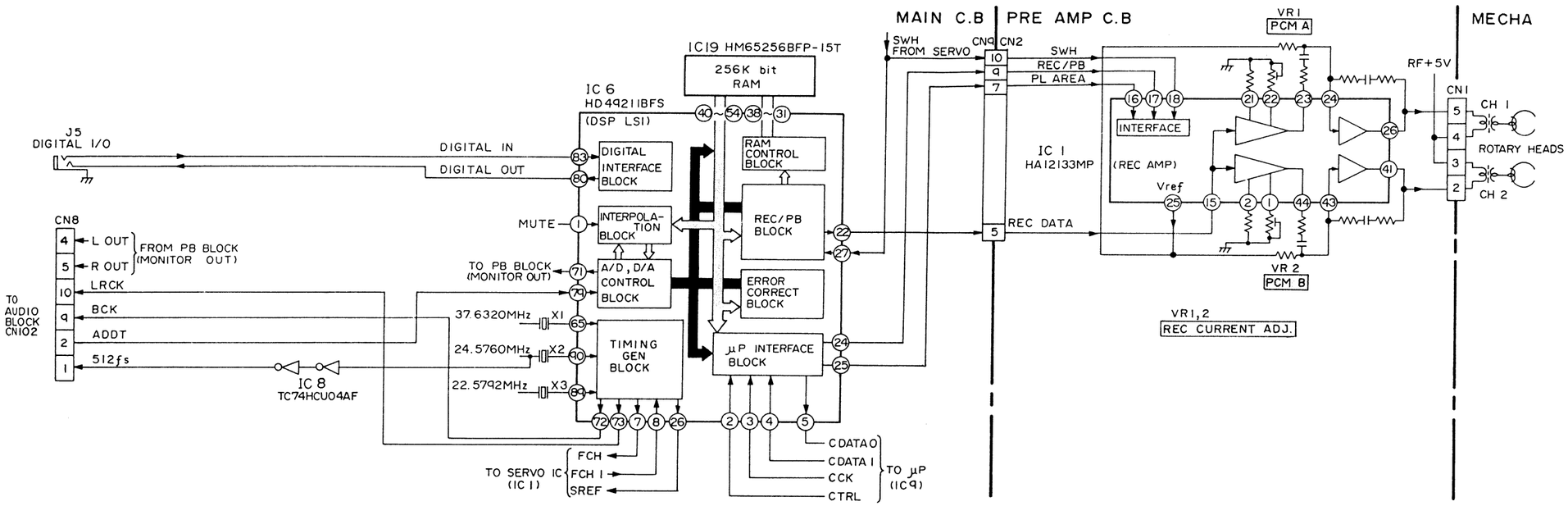
BLOCK DIAGRAM – 1 (IC COMPOSITION)

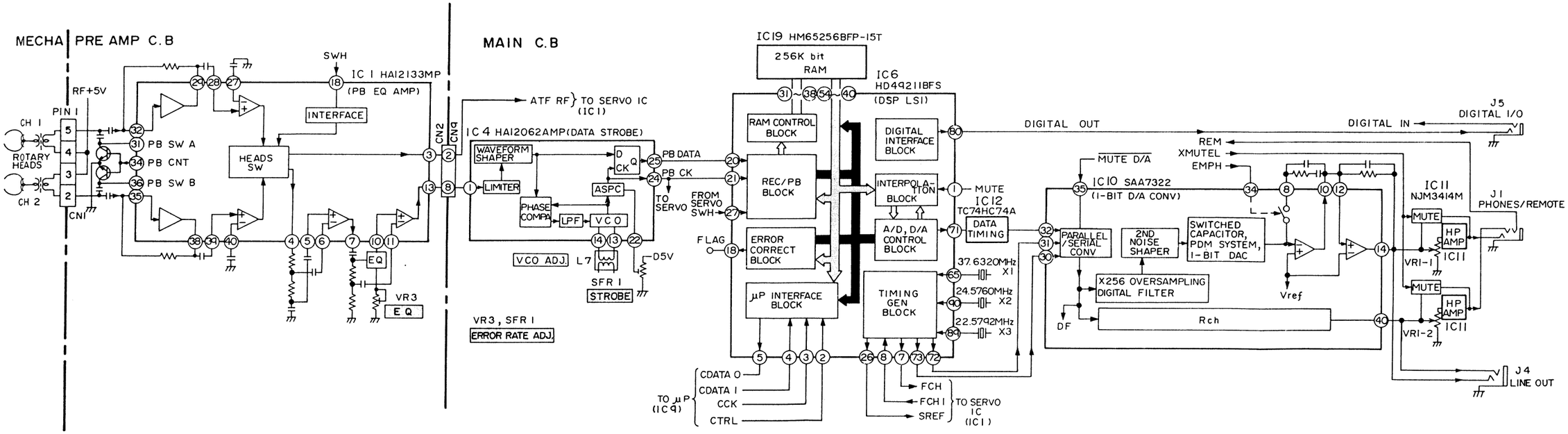


BLOCK DIAGRAM – 2 (SYSTEM CONTROL)

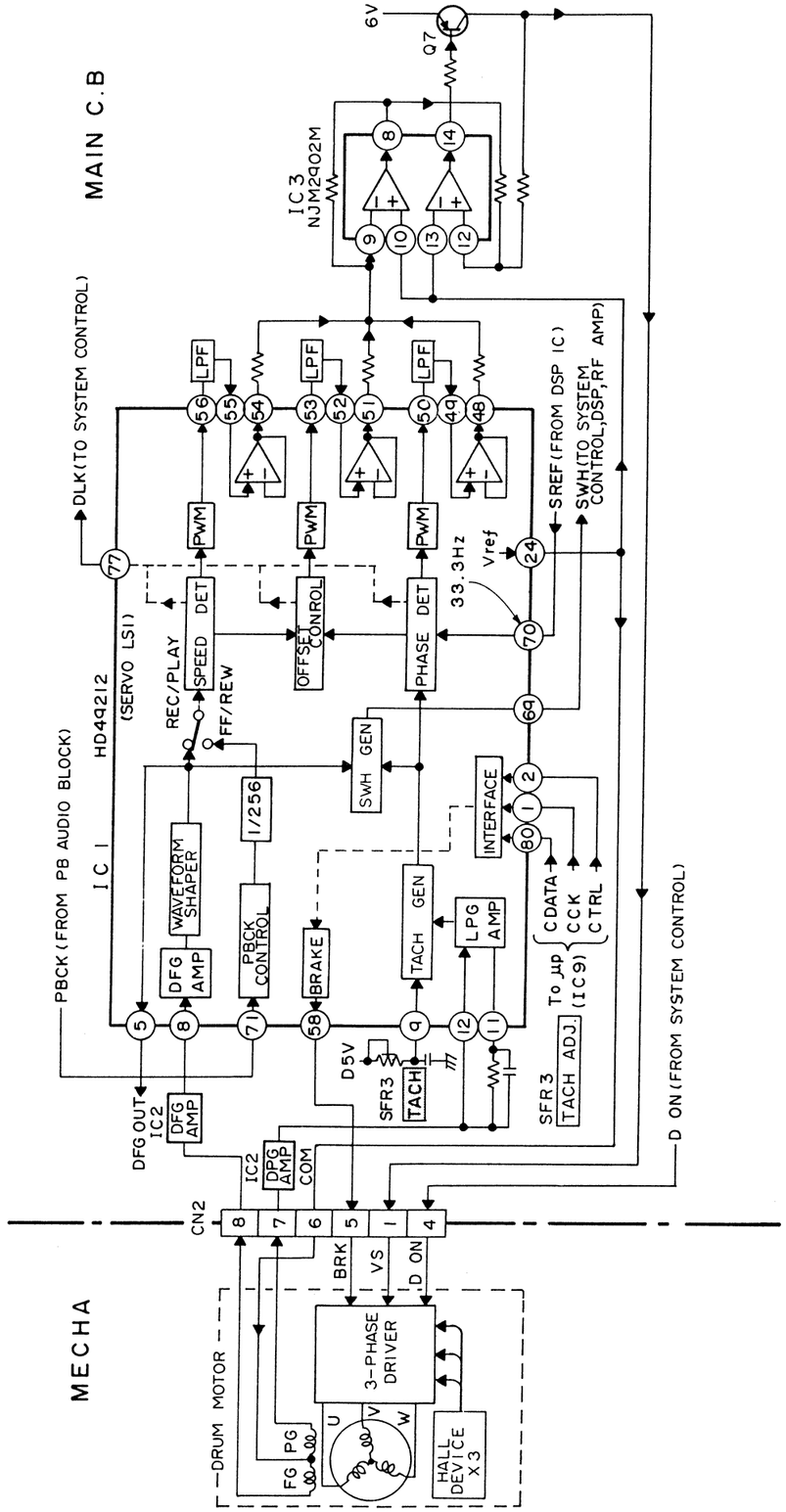


BLOCK DIAGRAM – 3 (REC/PB AUDIO)

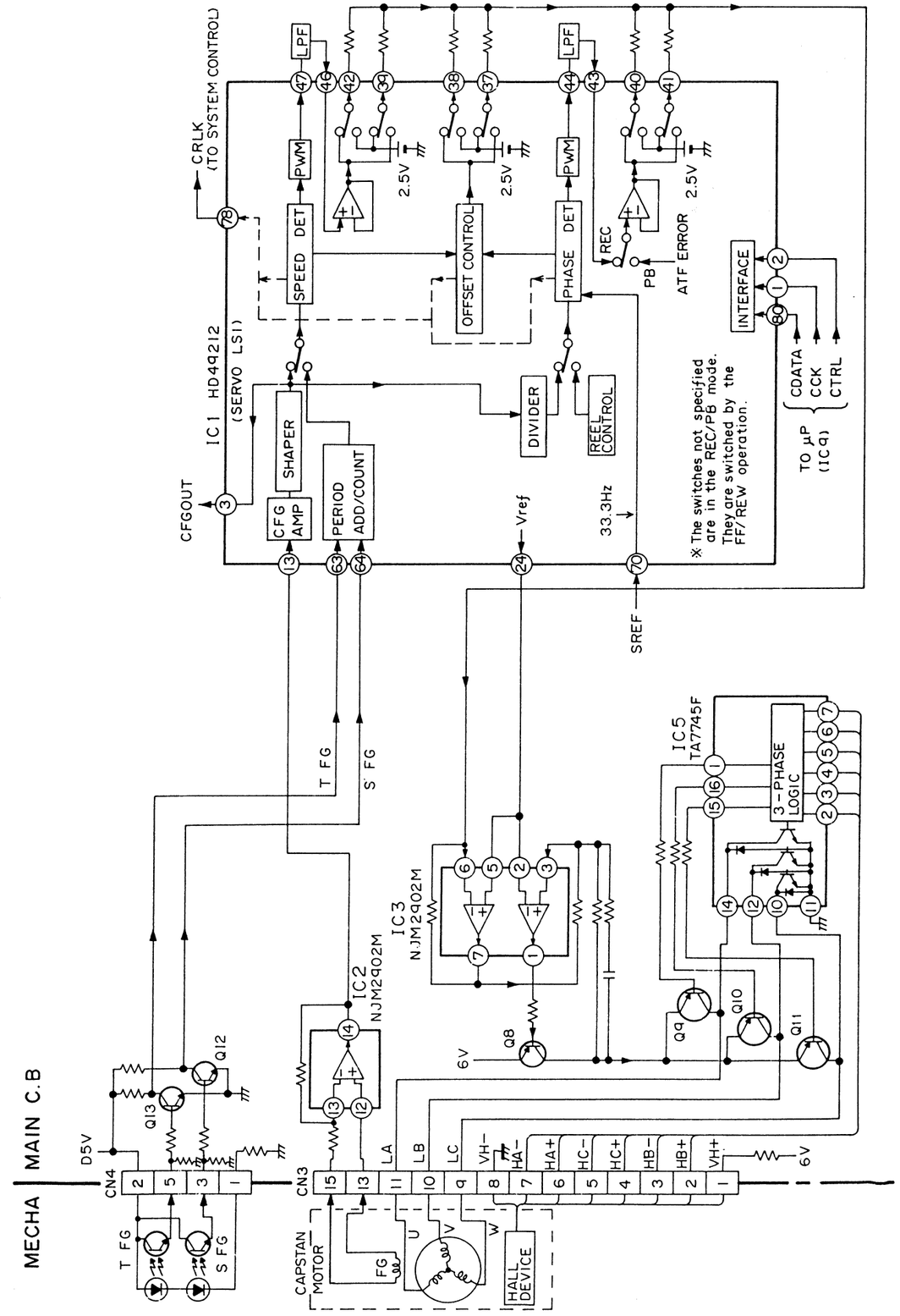




BLOCK DIAGRAM – 4 (DRUM SERVO)

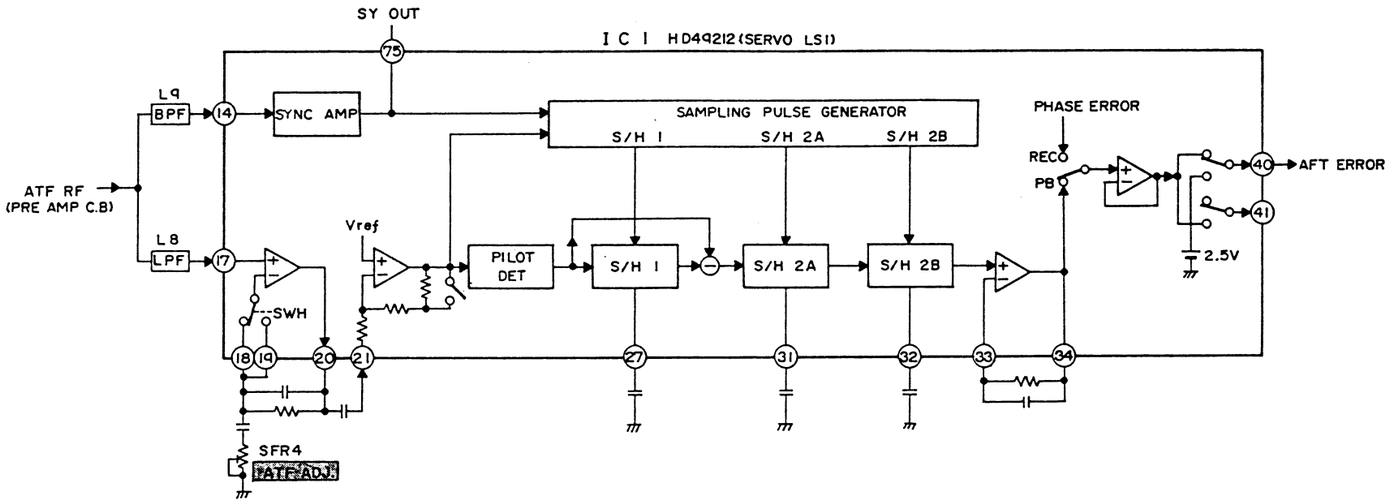


BLOCK DIAGRAM – 5 (CAPSTAN SERVO)



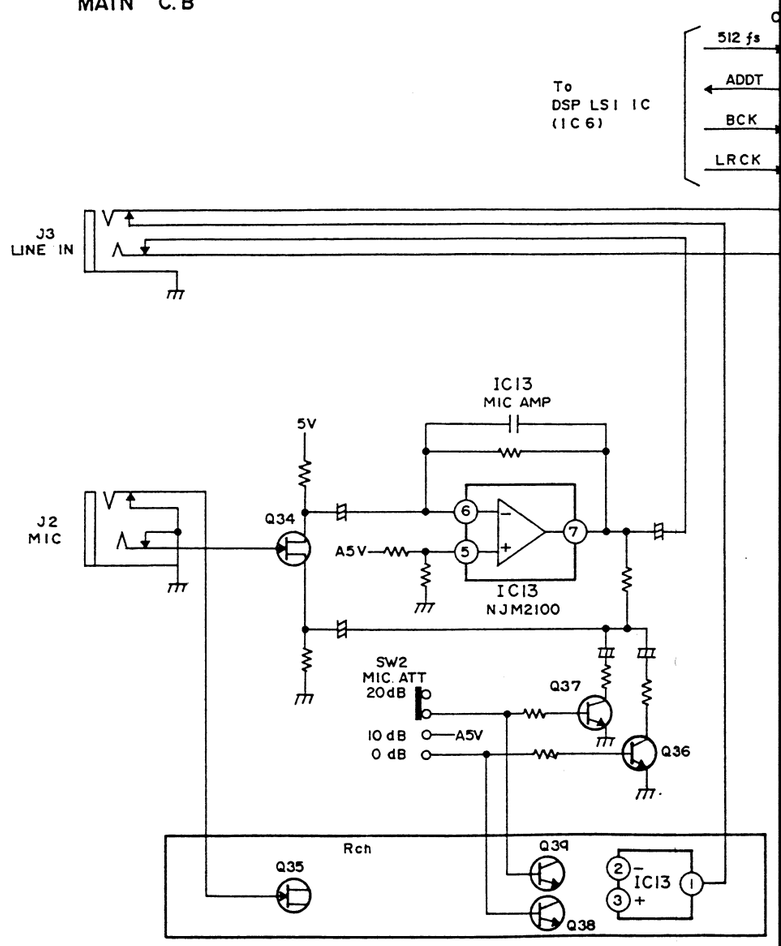
BLOCK DIAGRAM – 6 (ATF SERVO)

MAIN C.B



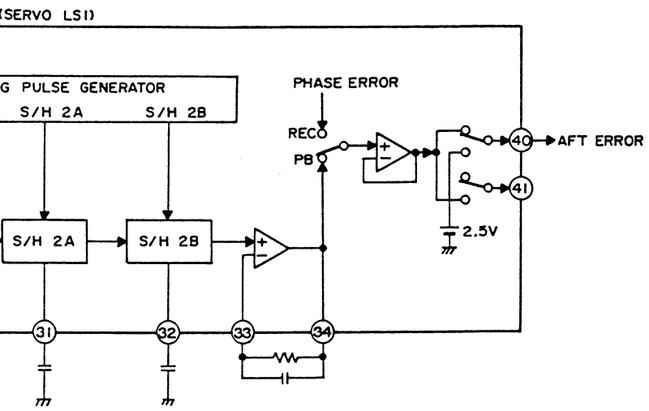
BLOCK DIADRAM – 7 (REC AUDIO)

MAIN C.B

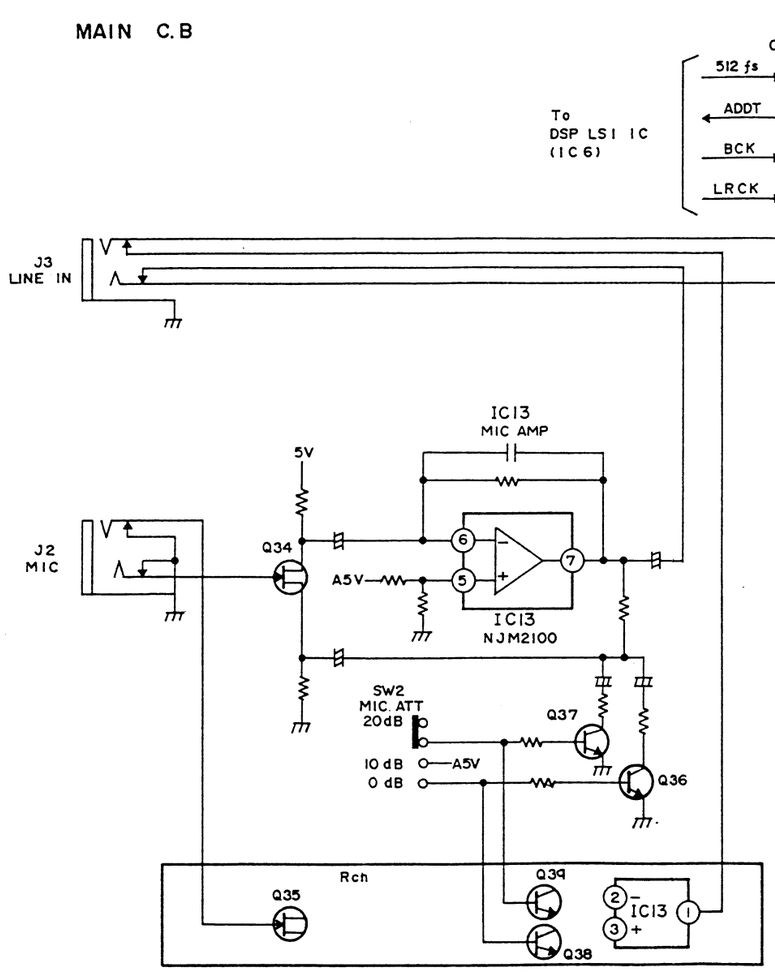


BLOCK DIADRAM – 7 (REC AUDIO)

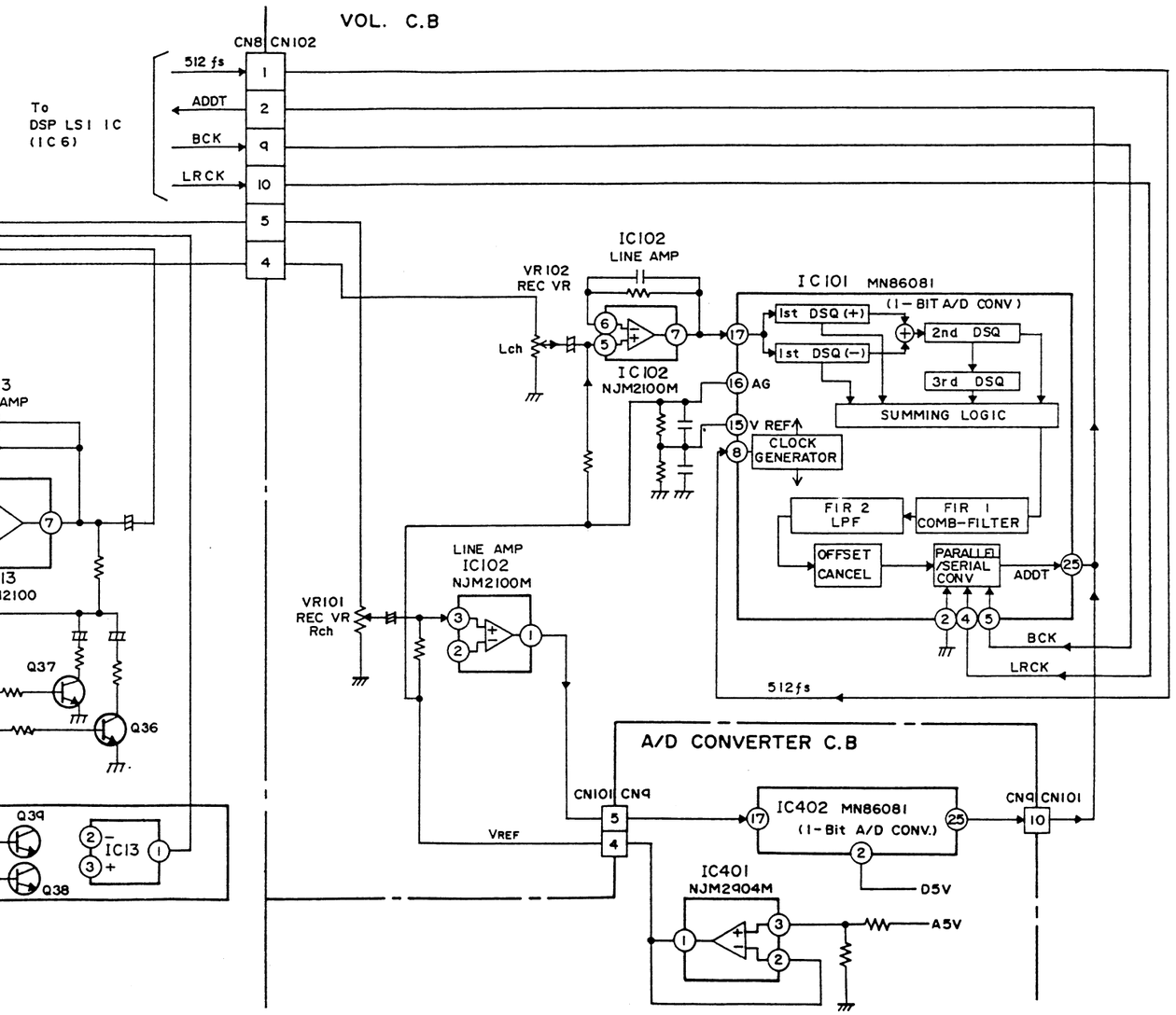
MAIN C.B

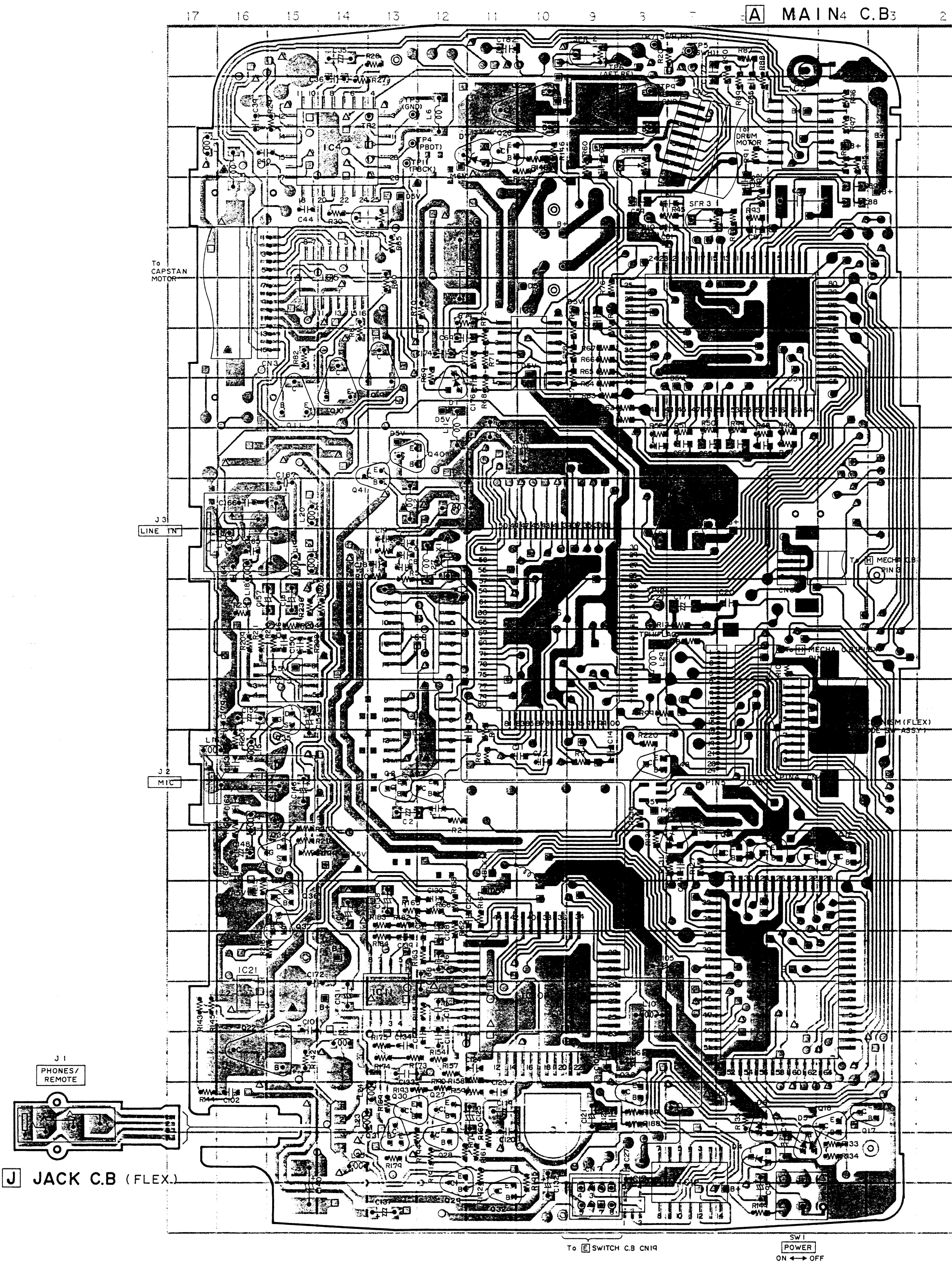


MAIN C.B



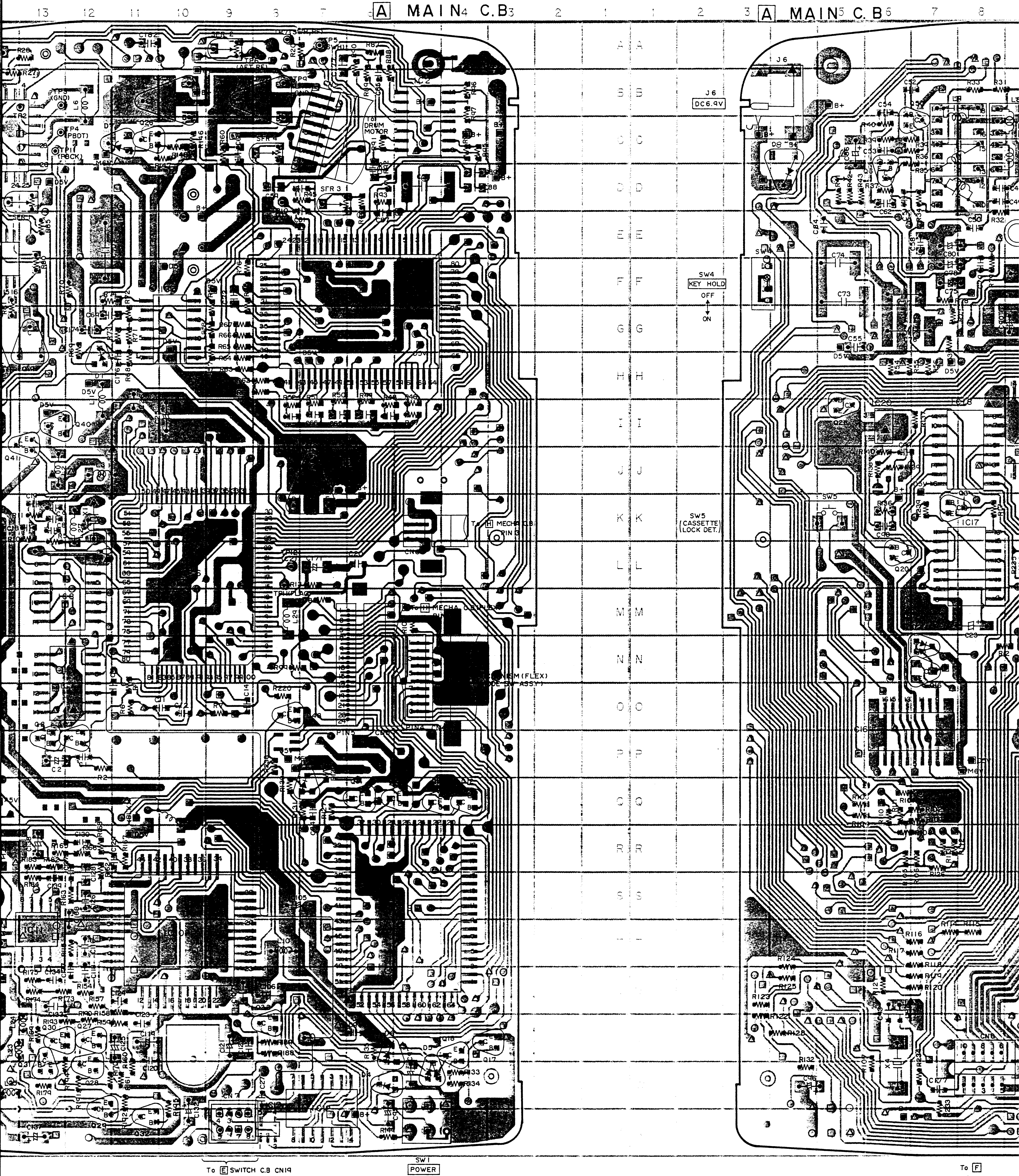
VOL. C.B





※ This wiring shows a 4-layer circuit board.
The ■ and ▲ marks show the state of the connections between the normal double-sided patterns and the invisible patterns in the layers.

▲ mark: Connected to the ground pattern.
B+ ■ mark: Connected to the +B pattern.
D5V ■ mark: Connected to DIGITAL 5V.
A5V ■ mark: Connected to AUDIO 5V.
M6V ■ mark: Connected to MOTOR 6V.



connections

ns and the

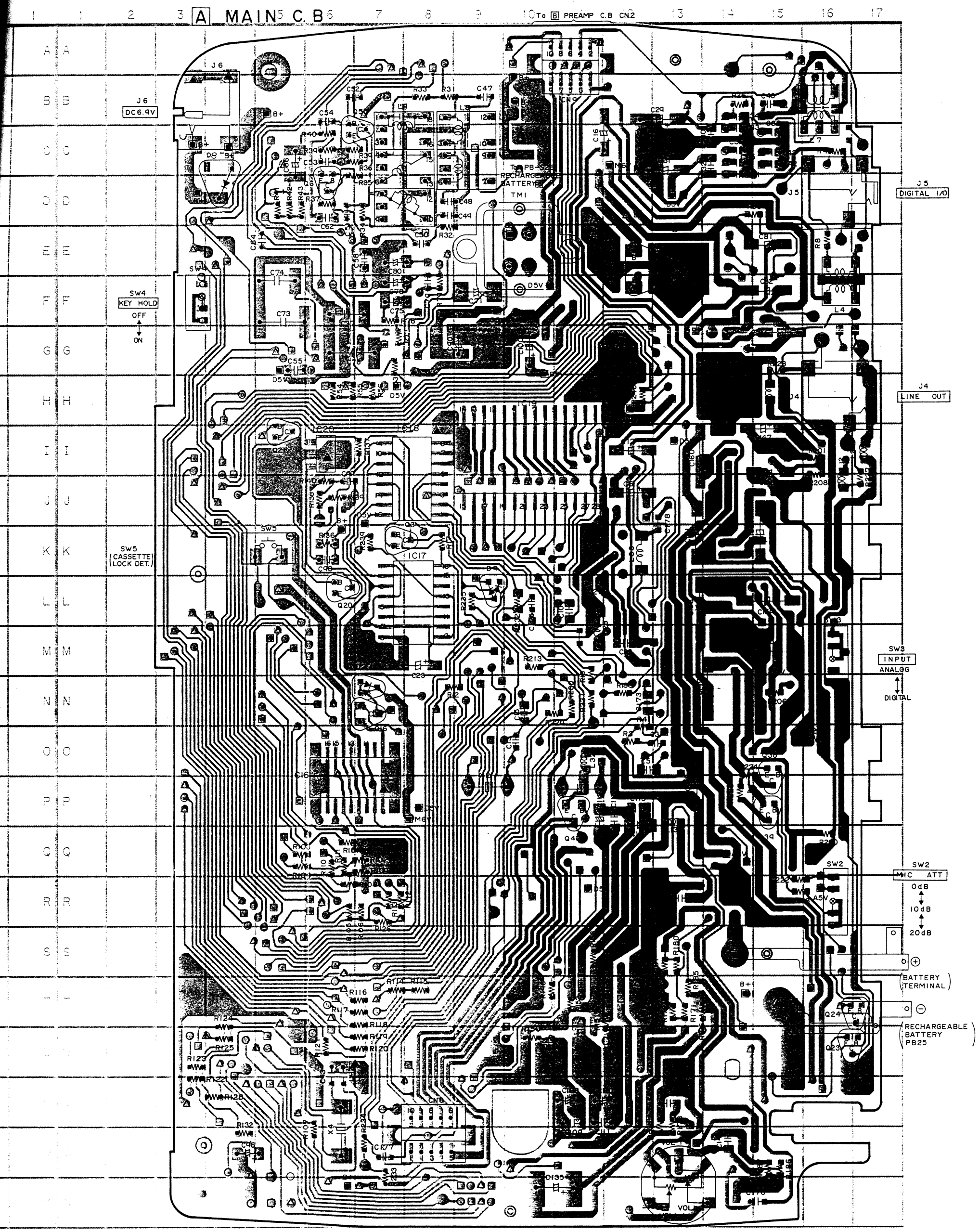
▲ mark: Connected to the ground pattern.

B+ ■ mark: Connected to the +B pattern.

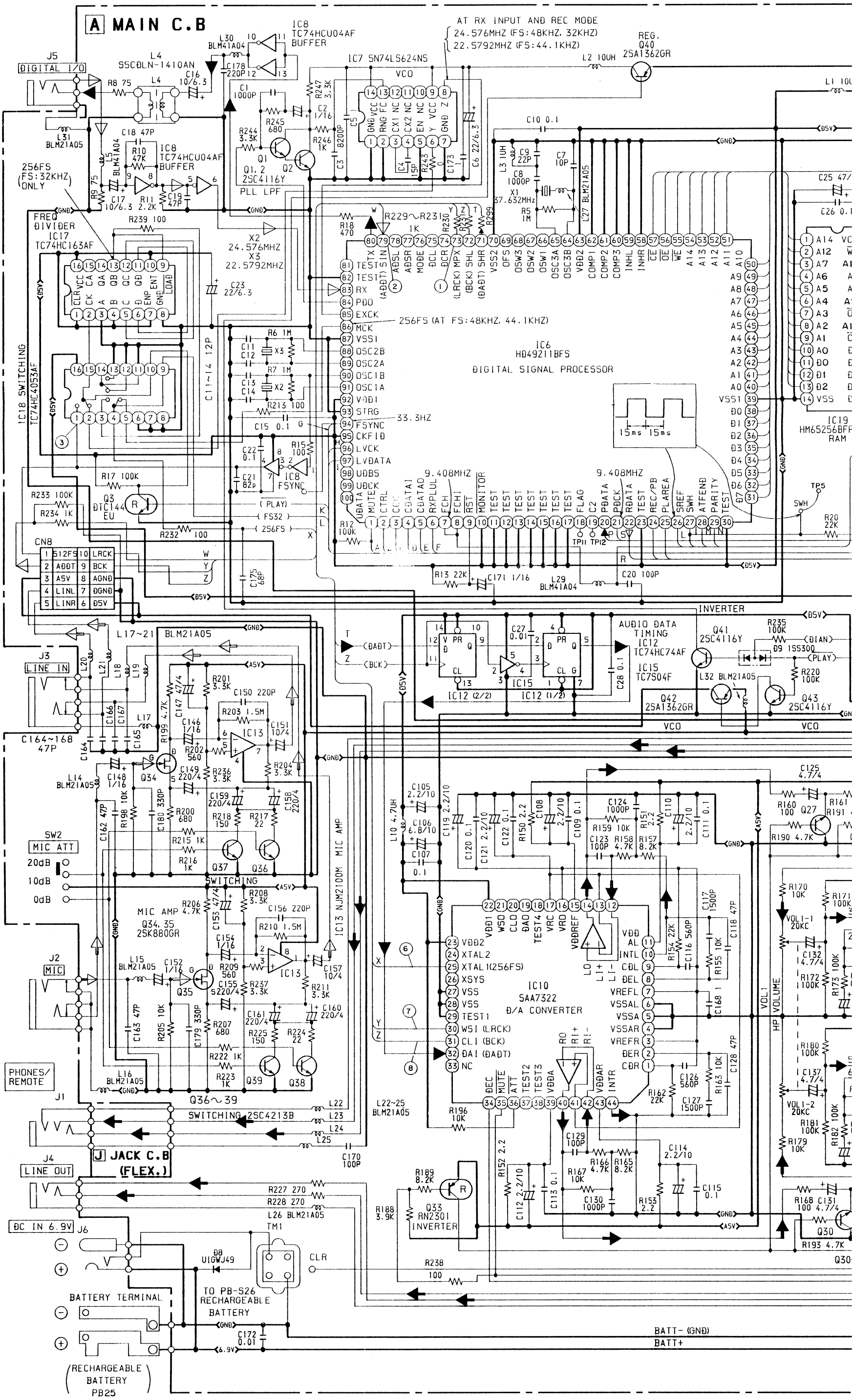
D5V ■ mark: Connected to DIGITAL 5V.

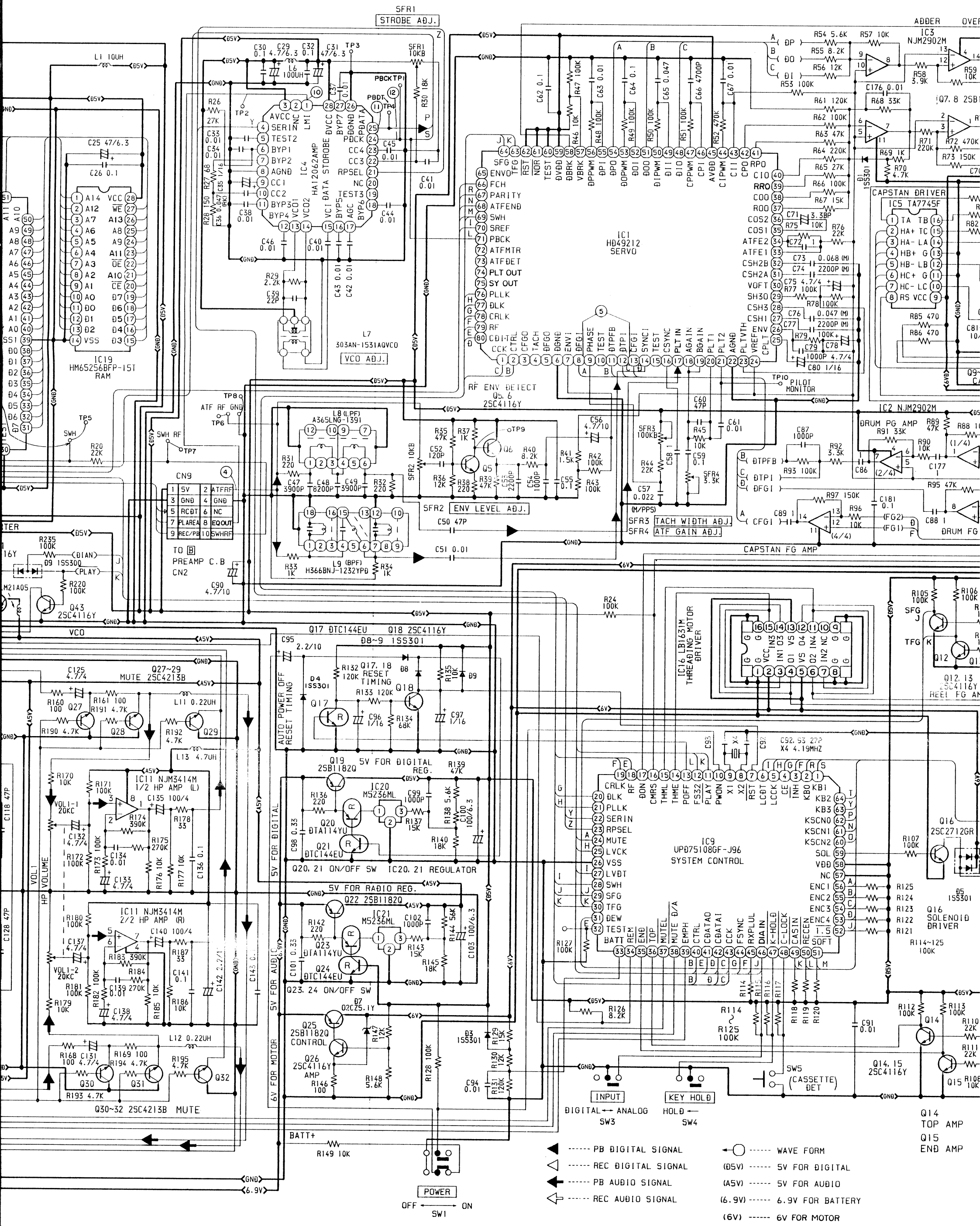
A5V ■ mark: Connected to AUDIO 5V.

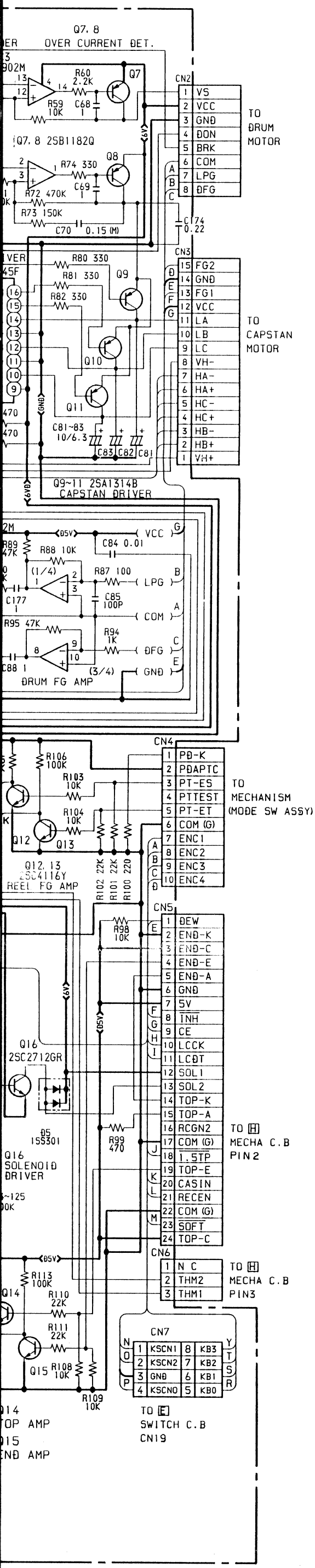
M6V ■ mark: Connected to MOTOR 6V.


A MAIN C.B
To B PREAMP C.B CN2
J6
DC6.9V
SW4
KEY HOLD
OFF
ON
SW5
(CASSETTE)
(LOCK DET.)
To PB-25
RECHARGEABLE
BATTERY
J5
DIGITAL I/O
J4
LINE OUT
SW3
INPUT
ANALOG
DIGITAL
SW2
MIC ATT
0dB
10dB
20dB
BATTERY
TERMINAL
RECHARGEABLE
BATTERY
PB25
To F
VOL. C.B
CN102
VOL I
VOLUME

SCHEMATIC DIAGRAM – 1,WAVE FORM – 1 (SERVO, SYSTEM CONTROL)




SFR1
STROBE ADJ.
L1 10UH
L6 100UH
IC19
HM65256BFP-15T
RAM
IC4
HA12062AMP
STROBE DATA
IC1
HD49212
SERVO
IC3
NJM2902M
CAPSTAN DRIVER
IC5 TA7745F
L7
303AN-1531AQVCO
VCO ADJ.
RF ENV DETECT
Q5, 6
2SC4116Y
L8 (LPF)
A365LNG-1391
L9 (BPF)
H366BNJ-1232YPD
SFR2 ENV LEVEL ADJ.
CN9
TO B
PREAMP C.B
CN2
IC2 NJM2902M
DRUM PG AMP
DRUM FG
CAPSTAN FG AMP
SFR3 TACH WIDTH ADJ.
SFR4 ATF GAIN ADJ.
IC16 LB1631M
THREADING MOTOR
DRIVER
IC9
UPD75108GF-J96
SYSTEM CONTROL
X4 4.19MHZ
Q27~29
MUTE 2SC4213B
Q30~32 2SC4213B MUTE
IC11 NJM3414M
1/2 HP AMP (L)
IC11 NJM3414M
2/2 HP AMP (R)
VOL1
VOLUME
HP
Q17 DTC144EU
Q18 2SC4116Y
AUTO POWER OFF
RESET TIMING
Q17, 18
RESET
TIMING
Q19
2SB1182Q
5V FOR DIGITAL
IC20
M5236ML
Q20
DTA114YU
Q21
DTC144EU
Q20, 21 ON/OFF SW
IC20, 21 REGULATOR
5V FOR RADIO REG.
Q22 2SB1182Q
IC21
M5236ML
Q23
DTA114YU
Q24
DTC144EU
Q23, 24 ON/OFF SW
5V FOR AUDIO
6V FOR MOTOR
Q25
2SB1182Q
CONTROL
Q26
2SC4116Y
AMP
D7
D2CZ5.1Y
D3
1SS301
INPUT
DIGITAL ↔ ANALOG
SW3
KEY HOLD
HOLD ←
SW4
SW5
(CASSETTE)
DET
POWER
OFF ↔ ON
SW1
Q16
2SC2712GR
Q16
SOLENOID
DRIVER
Q14, 15
2SC4116Y
Q14
TOP AMP
Q15
END AMP
PB DIGITAL SIGNAL
REC DIGITAL SIGNAL
PB AUDIO SIGNAL
REC AUDIO SIGNAL
WAVE FORM
(D5V) ------ 5V FOR DIGITAL
(A5V) ------ 5V FOR AUDIO
(6.9V) ------ 6.9V FOR BATTERY
(6V) ------ 6V FOR MOTOR



① IC6 (73) LRCK
AT PB (Fs:48kHz)
5V

BCK (Fs:48kHz)
2V/DIV
5μs/DIV
5V

② IC6 (79) BCK (Fs:48kHz)
5V

ADDT (AT NO SIGNAL INPUT)
2V/DIV
0.5μs/DIV
5V

③ CN8 (1) BCK (Fs:48kHz)
5V

512Fs
2V/DIV
0.1μs/DIV
3V

④ CN9 (2) ATF RF
0.1V/DIV
2ms/DIV
0.2V

SWH
2V/DIV
2ms/DIV
4V

⑤ IC1 (13) CFG
0.1V/DIV
1ms/DIV
0.3V

IC1 (8) DFG
0.2V/DIV
1ms/DIV
0.4V

⑥ IC10 (25) XTAL 1
4V
Fs = 48kHz ···0.08 μ sec
Fs = 44.1kHz···0.09 μ sec
Fs = 32kHz ···0.12 μ sec

⑦ IC10 (30) WSI
5V
Fs = 48kHz ···20.8 μ sec
Fs = 44.1kHz···22.7 μ sec
Fs = 32kHz ···31.25 μ sec

⑧ IC10 (31) CLI
5V
Fs = 48kHz ···0.65 μ sec
Fs = 44.1kHz···0.7 μ sec
Fs = 32kHz ···0.98 μ sec

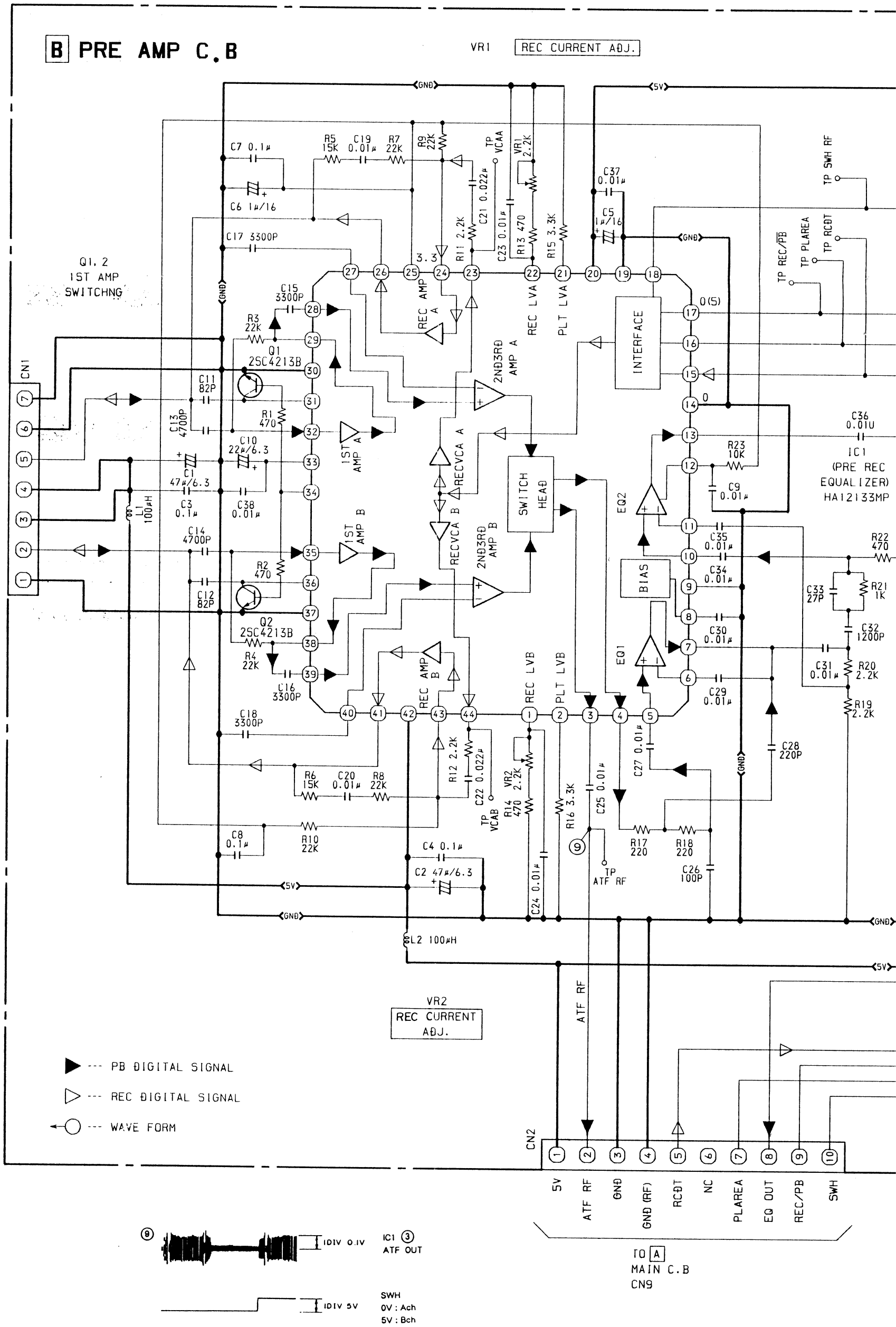
⑩ IC4 (1) EQ OUT
1DIV 0.2V

SWH
1DIV 5V

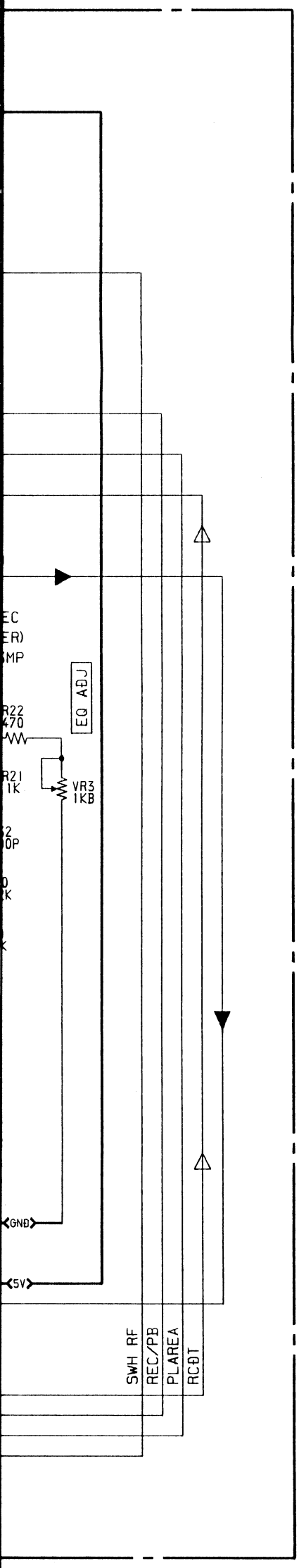
IC4 (1) EQ OUT EXPANDED WAVEFORM (eye pattern)

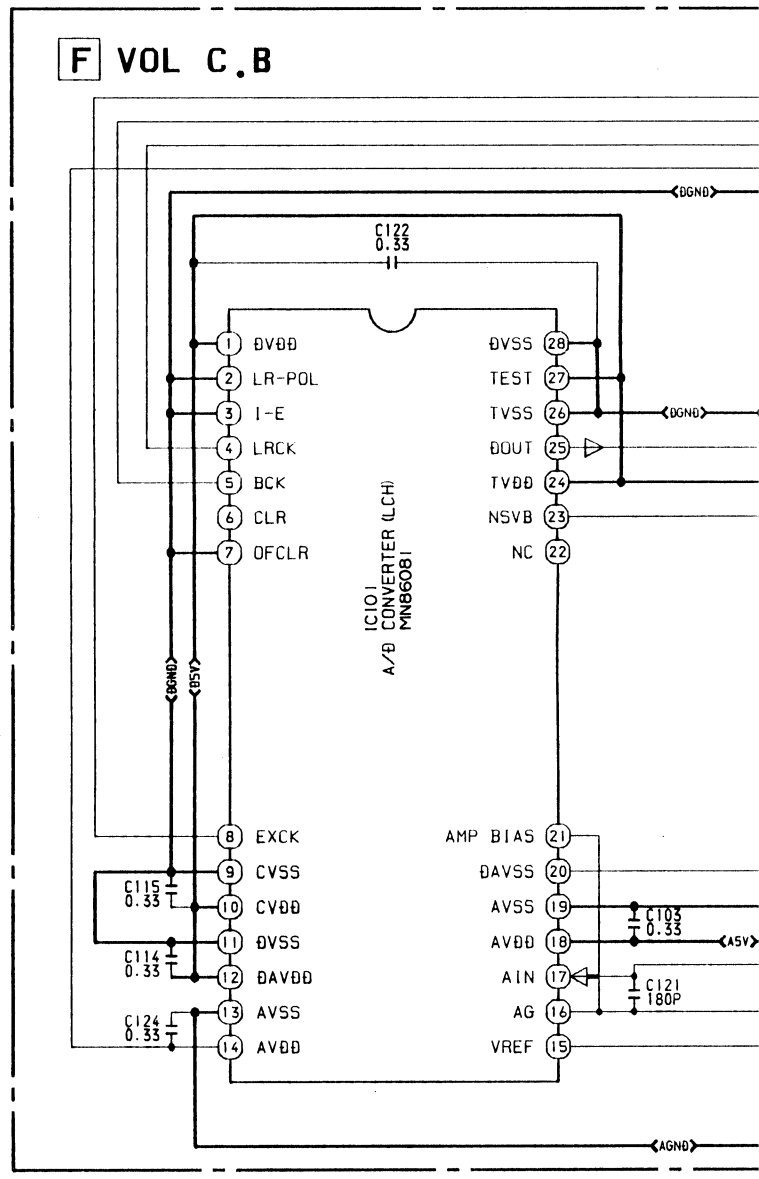
⑪ IC4 (25) DATA PB
1DIV 2V

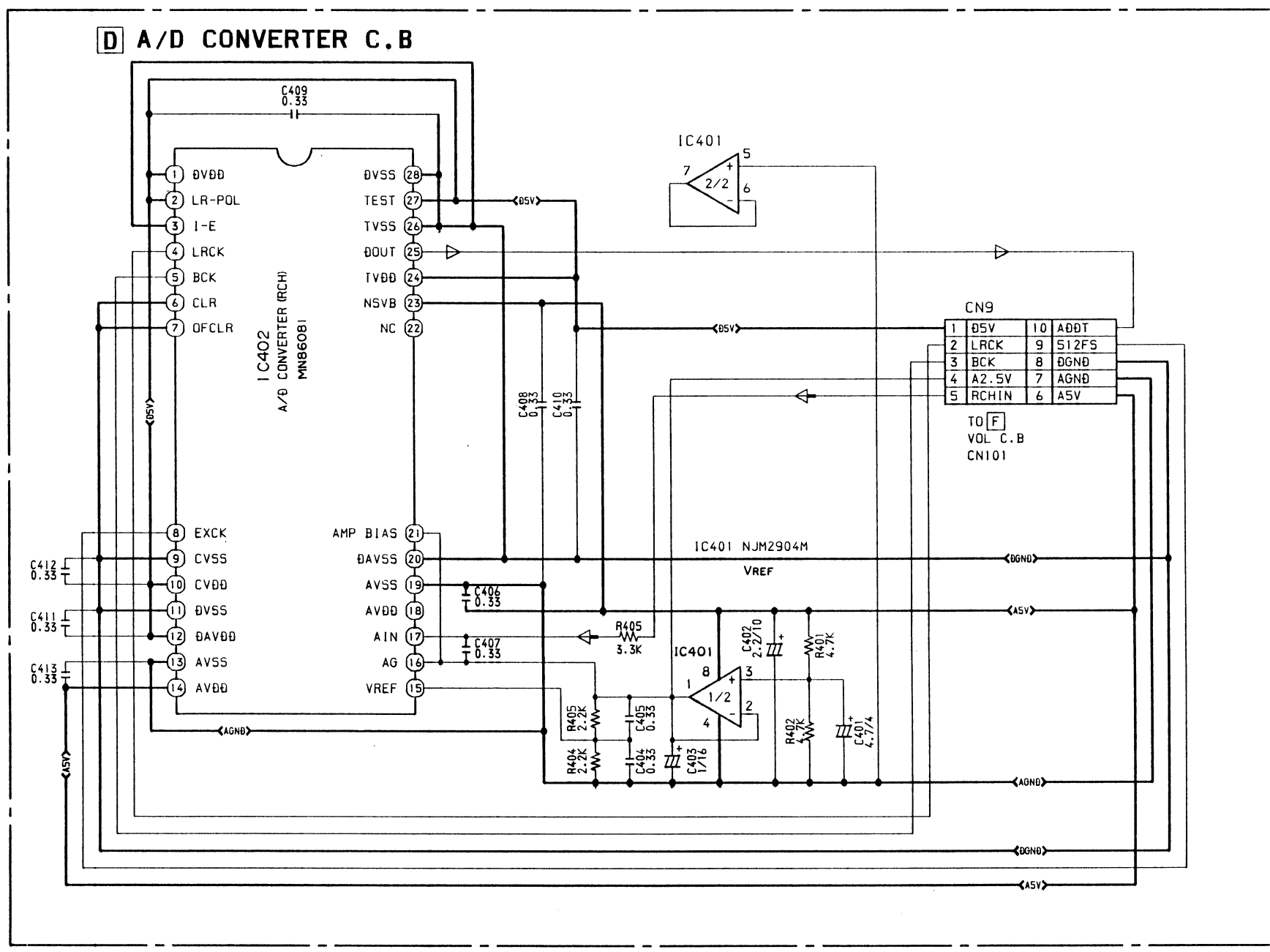
⑫ IC4 (24) PBCK
1DIV 2V
0.1μsec

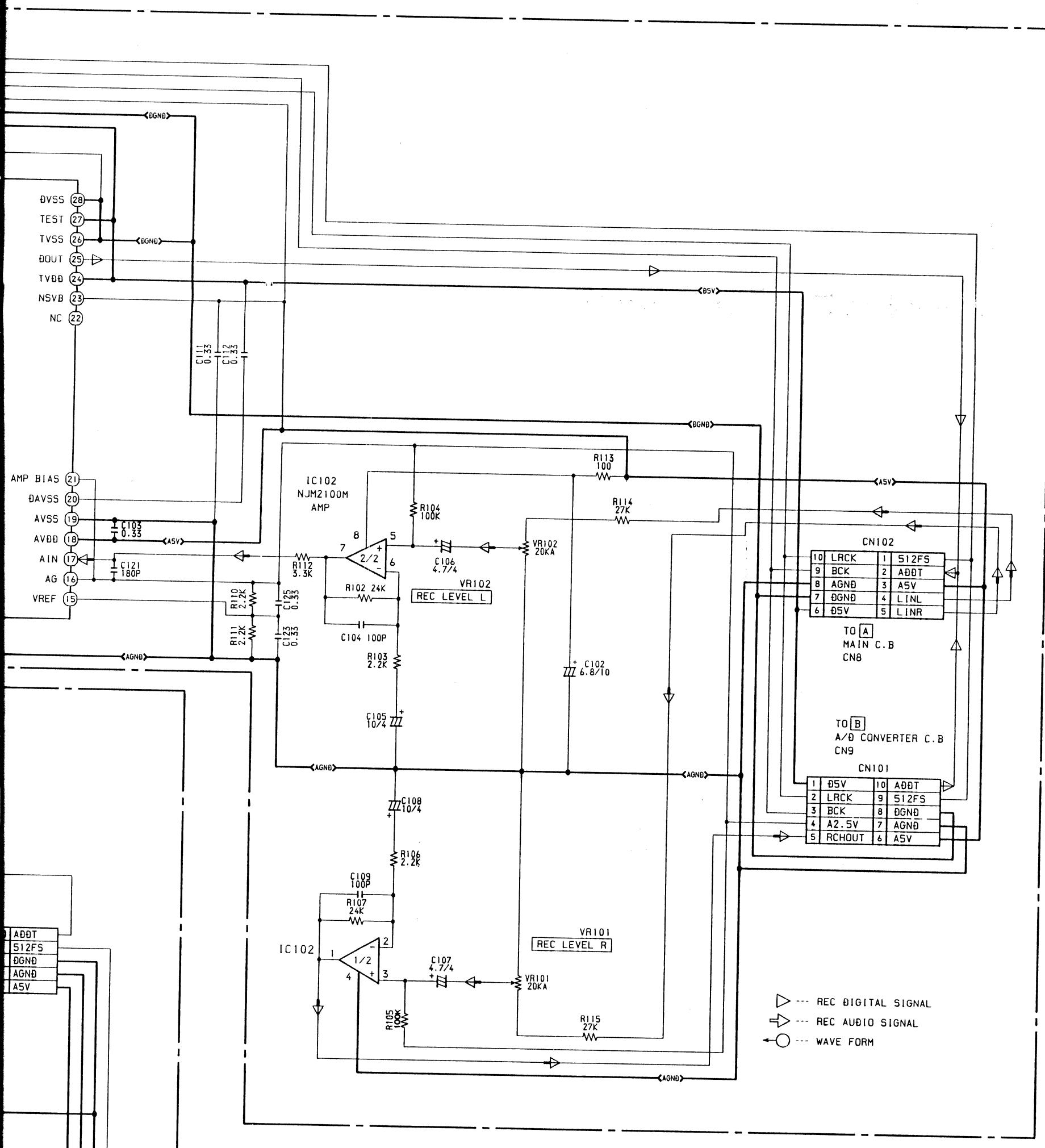

B PRE AMP C.B
VR1 REC CURRENT ADJ.
GND
5V
C7 0.1μ
R5 15K
C19 0.01μ
R7 22K
R9 22K
TP VCAA
VR1 2.2K
C37 0.01μ
C6 1μ/16
C5 1μ/16
C17 3300P
C21 0.022μ
C23 0.01μ
R13 470
R15 3.3K
R11 2.2K
3.3
TP SWH RF
TP REC/PB
TP PLAREA
TP RCDT
Q1, 2 1ST AMP SWITCHNG
C15 3300P
R3 22K
Q1 2SC4213B
REC AMP A
REC LVA
PLT LVA
2ND3RD AMP A
INTERFACE
O(S)
O
CN1
TO D DRUM C.B (FLEX) PIN1
A GND
A HD
BIAS
B HD
B GND
C11 82P
C13 4700P
R1 470
C10 22μ/6.3
C1 47μ/6.3
C3 0.1μ
C38 0.01μ
L1 100μH
1ST AMP A
1ST AMP B
C14 4700P
R2 470
C12 82P
Q2 2SC4213B
RECVCA A
RECVCA B
SWITCH HEAD
EQ2
EQ1
BIAS
IC1 (PRE REC EQUALIZER) HA12133MP
R23 10K
C9 0.01μ
C35 0.01μ
C34 0.01μ
C30 0.01μ
C29 0.01μ
R22 470
R21 1K
C33 27P
C32 1200P
C31 0.01μ
R20 2.2K
R19 2.2K
C28 220P
C27 0.01μ
C36 0.01U
R4 22K
C16 3300P
REC AMP B
REC LVB
PLT LVB
C18 3300P
R12 2.2K
C22 0.022μ
R6 15K
C20 0.01μ
R8 22K
TP VCAB
VR2 2.2K
R14 470
R16 3.3K
C25 0.01μ
R17 220
R18 220
C26 100P
C8 0.1μ
R10 22K
C4 0.1μ
C2 47μ/6.3
C24 0.01μ
TP ATF RF
L2 100μH
VR2 REC CURRENT ADJ.
PB DIGITAL SIGNAL
REC DIGITAL SIGNAL
WAVE FORM
CN2
5V
ATF RF
GND
GND (RF)
RCDT
NC
PLAREA
EQ OUT
REC/PB
SWH
TO A MAIN C.B CN9
IDIV 0.1V
IC1 ③ ATF OUT
IDIV 5V
SWH
0V : Ach
5V : Bch

SCHEMATIC DIAGRAM – 3 (A/D CONVERTER)

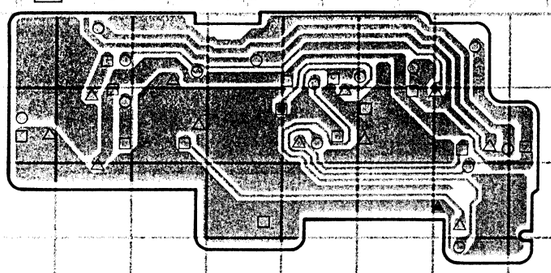




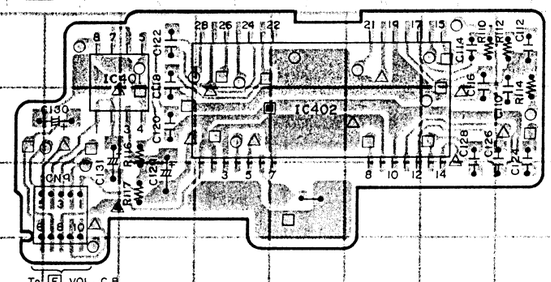



ĐVSS 28
TEST 27
TVSS 26
ĐOUT 25
TVĐĐ 24
NSVB 23
NC 22
AMP BIAS 21
ĐAVSS 20
AVSS 19
AVĐĐ 18
AIN 17
AG 16
VREF 15
ĐGNĐ
ĐGNĐ
Đ5V
AGNĐ
AGNĐ
AGNĐ
AGNĐ
A5V
C111 0.33
C112 0.33
C103 0.33
C121 180P
R110 2.2K
R111 2.2K
C125 0.33
C123 0.33
IC102
NJM2100M
AMP
R104 100K
R112 3.3K
R102 24K
C104 100P
R103 2.2K
C106 4.7/4
VR102 20KA
VR102
REC LEVEL L
R113 100
R114 27K
C102 6.8/10
C105 10/4
C108 10/4
R106 2.2K
C109 100P
R107 24K
IC102
1/2
C107 4.7/4
VR101 20KA
VR101
REC LEVEL R
R105 100K
R115 27K
CN102
10 LRCK
9 BCK
8 AGNĐ
7 ĐGNĐ
6 Đ5V
1 512FS
2 AĐĐT
3 A5V
4 LINL
5 LINR
TO A
MAIN C.B
CN8
TO B
A/Đ CONVERTER C.B
CN9
CN101
1 Đ5V
2 LRCK
3 BCK
4 A2.5V
5 RCHOUT
10 AĐĐT
9 512FS
8 ĐGNĐ
7 AGNĐ
6 A5V
AĐĐT
512FS
ĐGNĐ
AGNĐ
A5V
--- REC ĐIGITAL SIGNAL
--- REC AUĐIO SIGNAL
--- WAVE FORM

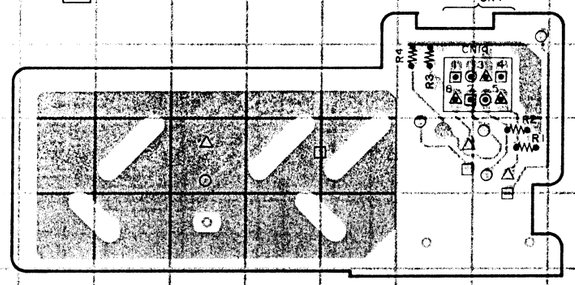
D A/D CONV. C.B



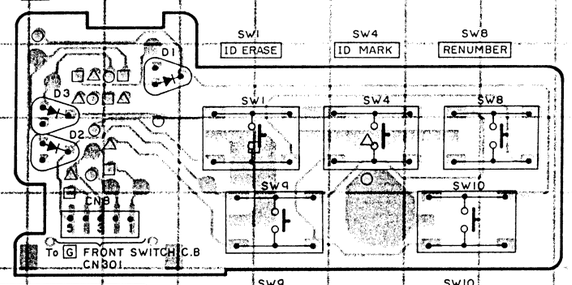
D A/D CONV. C.B



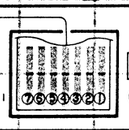
E SWITCH C.B



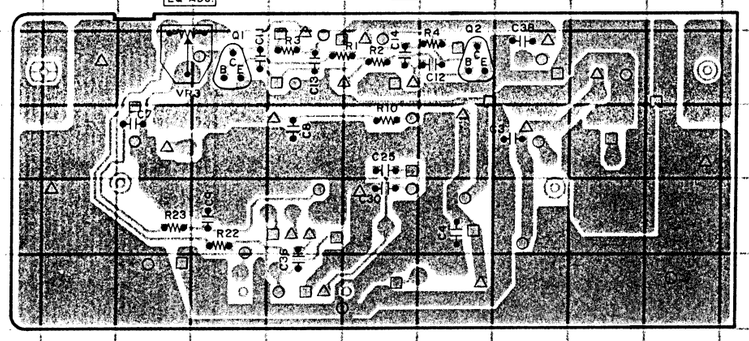
E SWITCH C.B



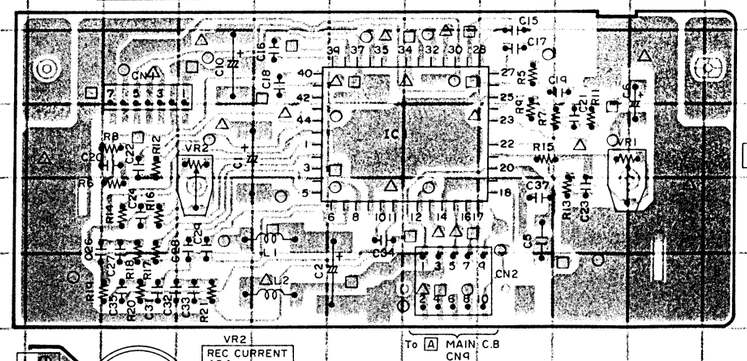
I DRUM C.B (FLEXIBLE PCB)



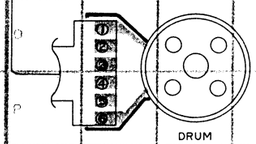
B PREAMP C.B



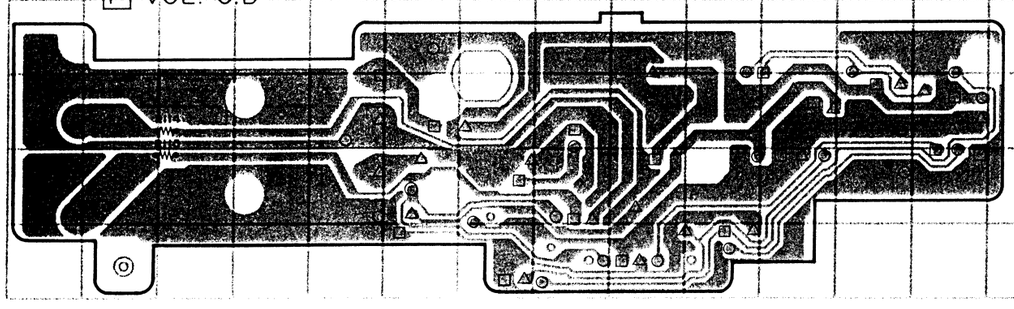
B PREAMP C.B



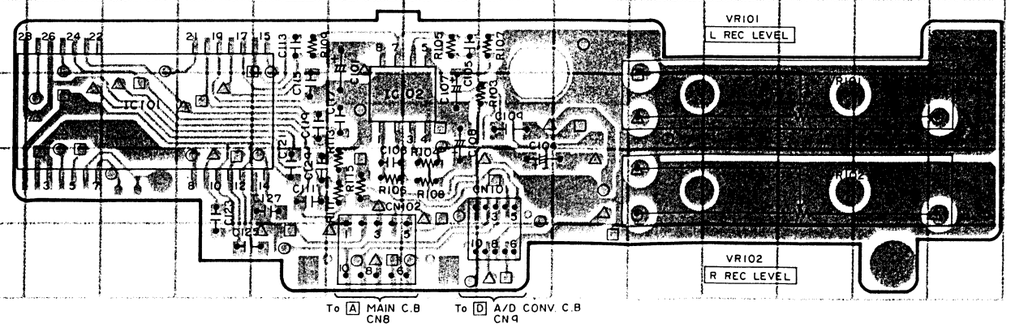
VR2 REC CURRENT ADJ.



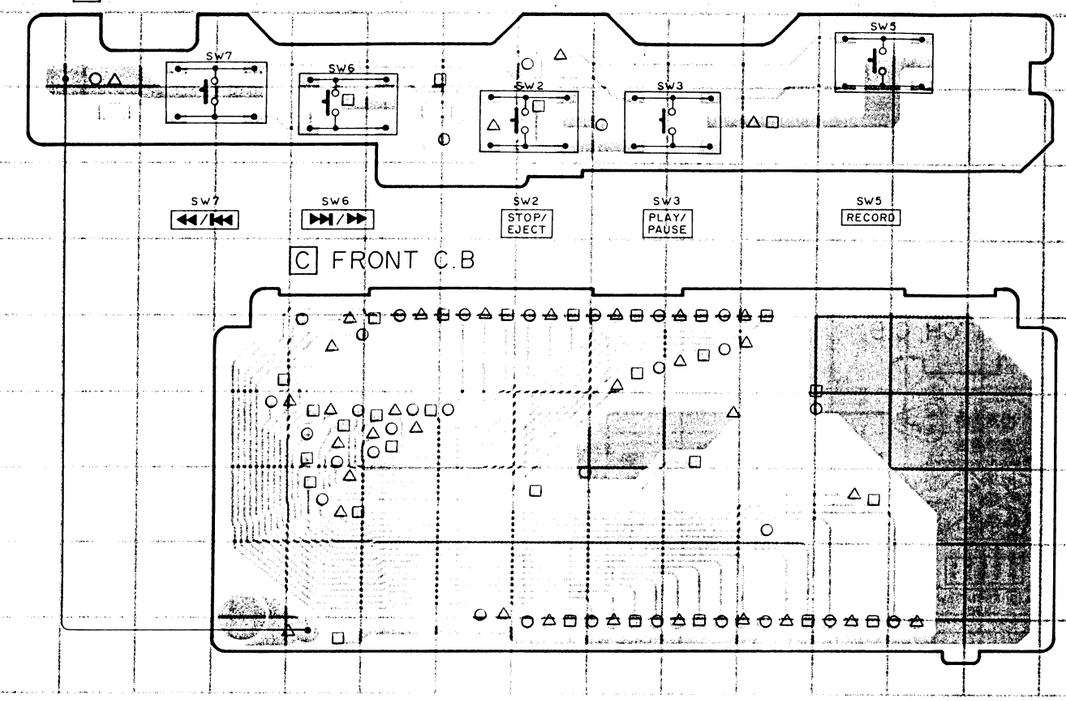
F VOL. C.B



F VOL. C.B

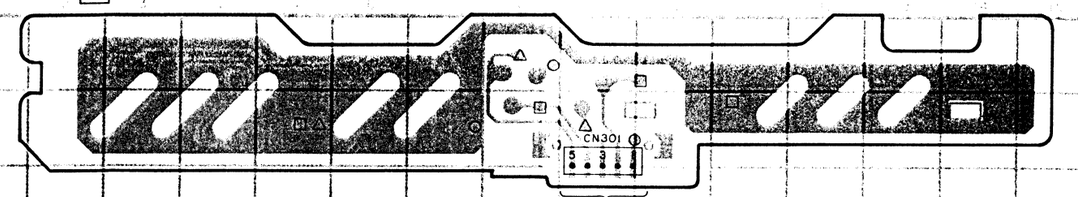


G FRONT SWITCH C.B

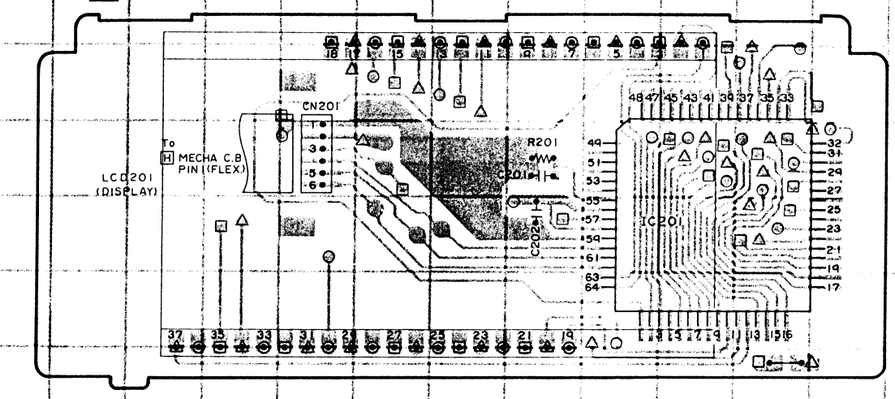


C FRONT C.B

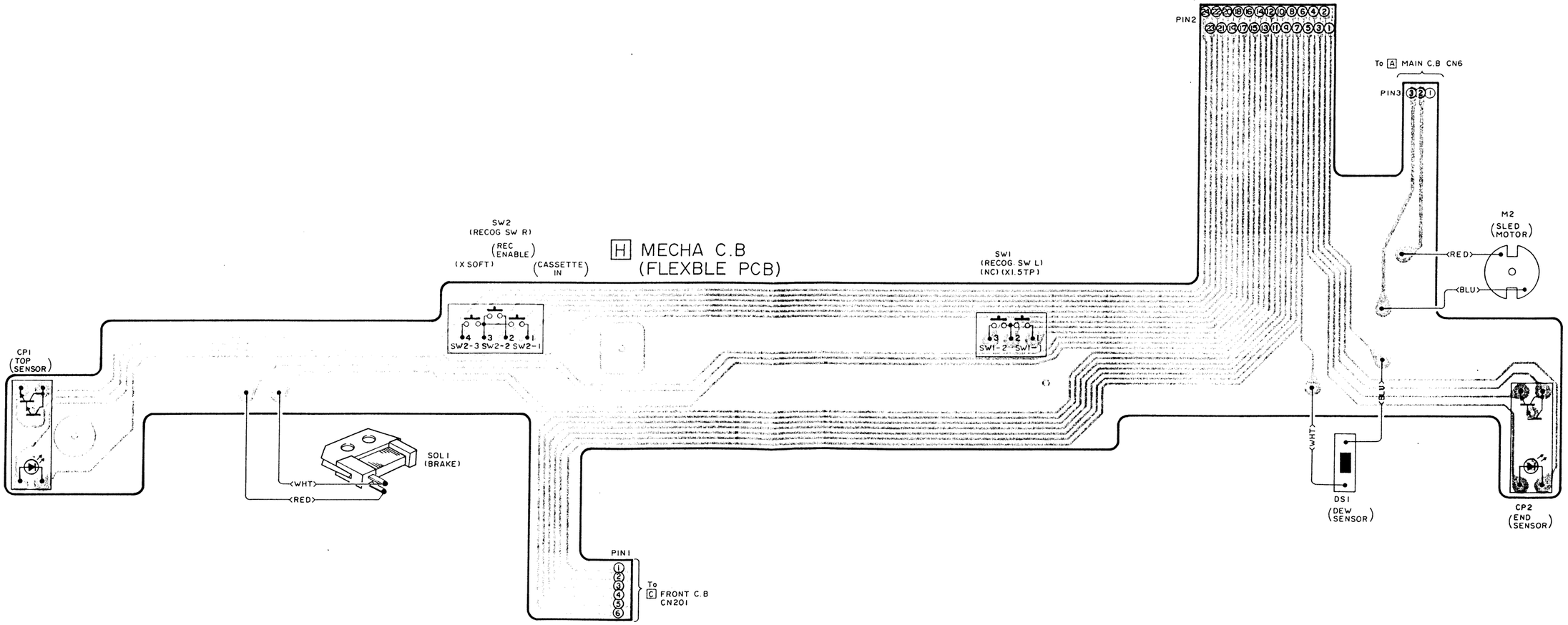
G FRONT SWITCH C.B

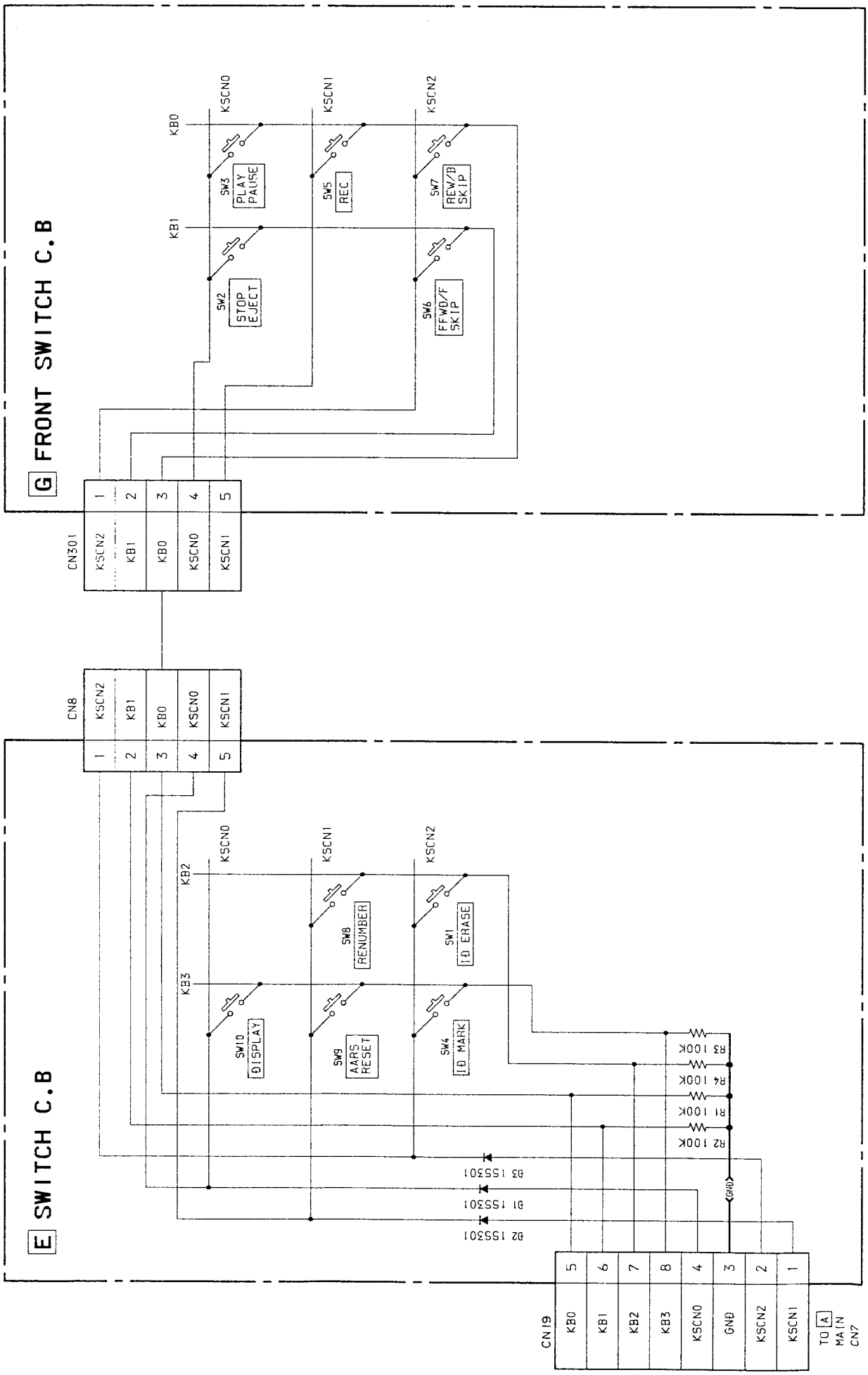


C FRONT C.B

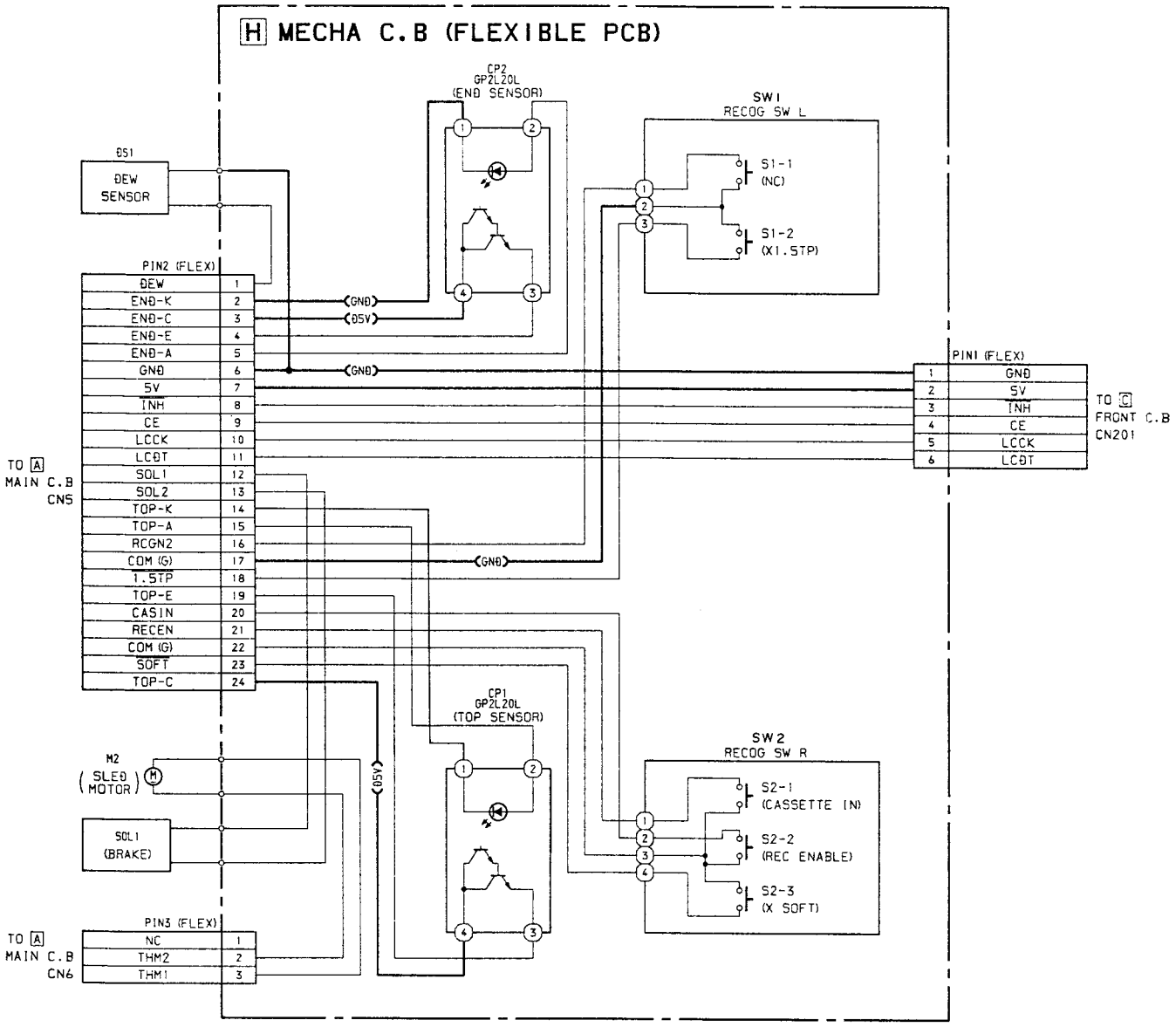


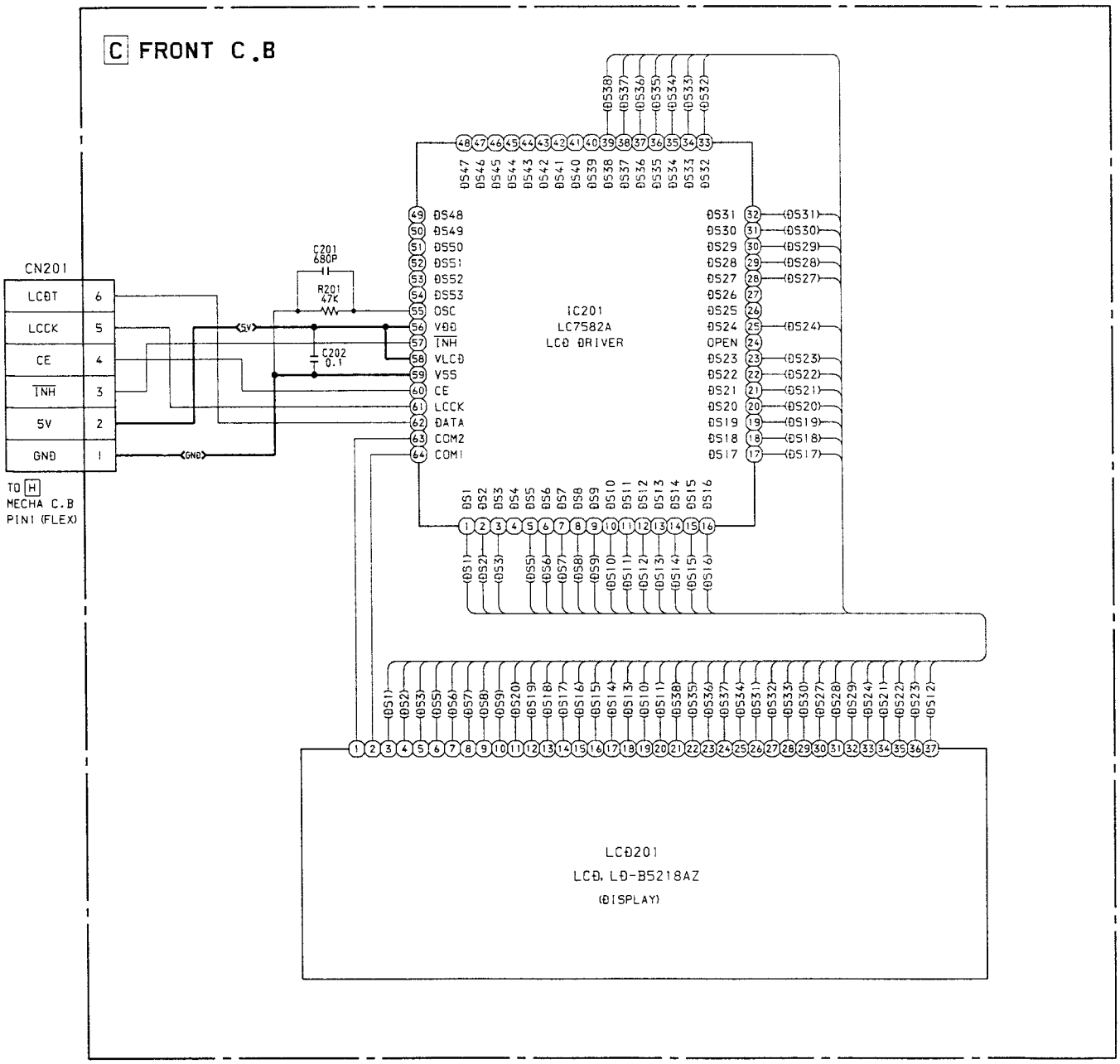
H MECHA C.B (FLEXBLE PCB)




G FRONT SWITCH C.B
KB0
KB1
KSCN0
KSCN1
KSCN2
SW3 PLAY PAUSE
SW5 REC
SW7 REW/B SKIP
SW2 STOP EJECT
SW6 FFWD/F SKIP
CN301
KSCN2
KB1
KB0
KSCN0
KSCN1
CN8
E SWITCH C.B
KB2
KB3
SW8 RENUMBER
SW1 ID ERASE
SW10 DISPLAY
SW9 AARS RESET
SW4 ID MARK
R3 100K
R4 100K
R1 100K
R2 100K
GND
D3 1SS301
D1 1SS301
D2 1SS301
CN19
KB0
KB1
KB2
KB3
KSCN0
GND
KSCN2
KSCN1
TO A MAIN CN7

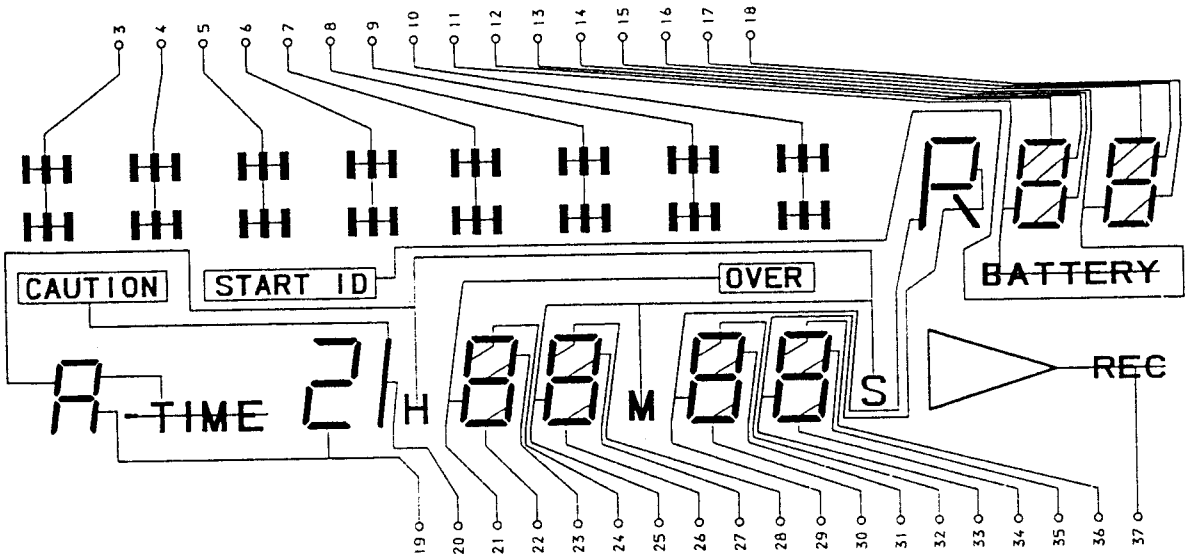
SCHEMATIC DIAGRAM – 5 (MECHA)



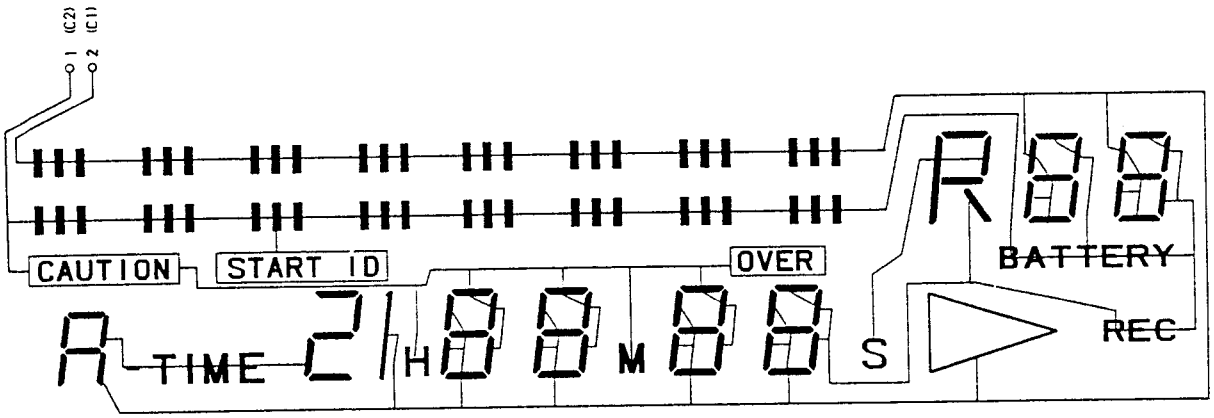

C FRONT C.B
CN201
LCDT 6
LCCK 5
CE 4
INH 3
5V 2
GND 1
TO H
MECHA C.B
PIN1 (FLEX)
C201
680P
R201
47K
C202
0.1
5V
GND
IC201
LC7582A
LCD DRIVER
OSC
VDD
INH
VLCD
VSS
CE
LCCK
DATA
COM2
COM1
OPEN
LCD201
LCD, LD-B5218AZ
(DISPLAY)

LCD SEGMENT/COMMON

SEGMENT

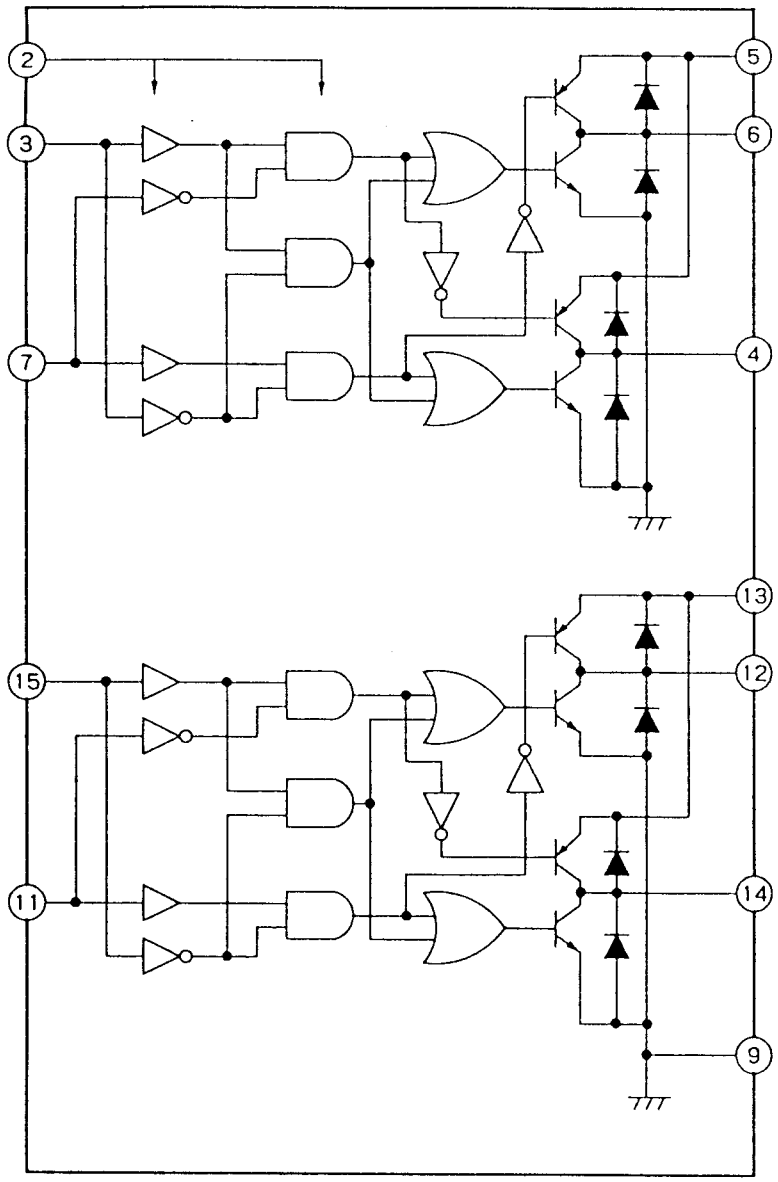


COMMON

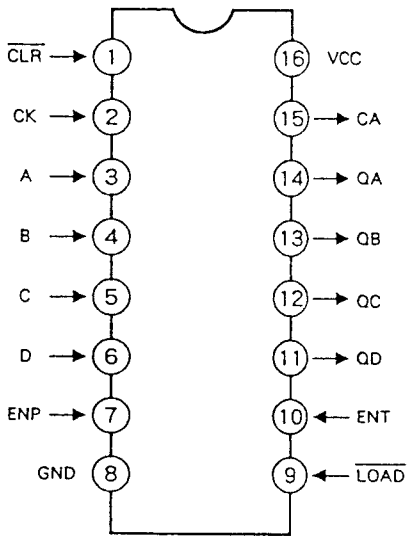


IC BLOCK DIAGRAM – 2

IC,LB1631M



IC,TC74HC163A



TRUTH TABLE

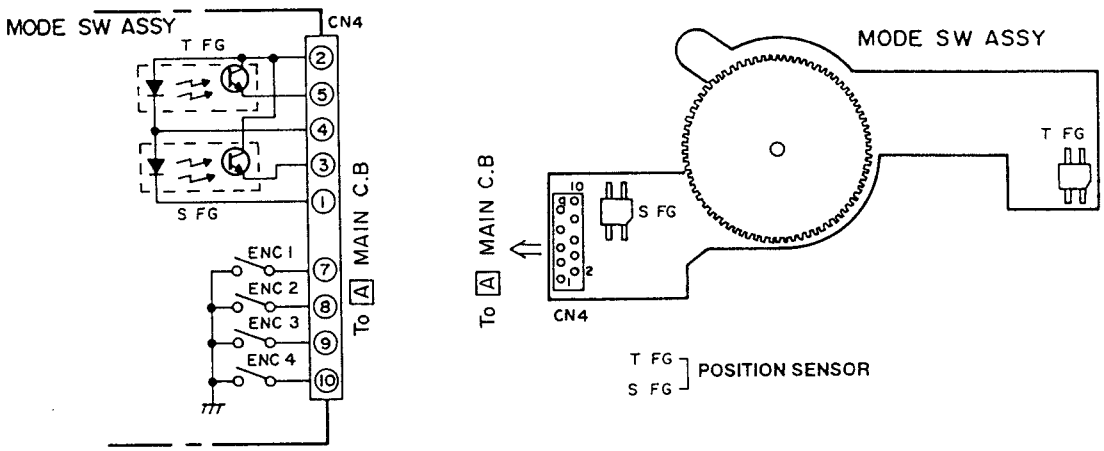
INPUT					OUTPUT				
CLR	LOAD	ENT	ENP	CK	QA	QB	QC	QD	CA
L	X	X	X	↑	L	L	L	L	L
H	L	L	X	↑	A	B	C	D	L
H	L	H	X	↑					L※
H	H	H	H	↑	COUNT				L※
H	H	L	X	X	COUNT INHIBIT				L
H	H	H	L	X	COUNT INHIBIT				L※

↑ : Shows that "L" changes to "H".

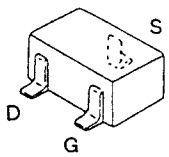
※ : Normally, CA is "L", but it goes "H" when QA,QB,QC,QD and ENT are "H"

X : "H" or "L".

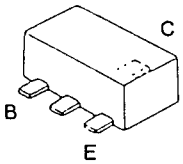
MECHANISM (MODE SW ASSY)



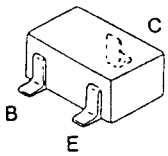
TRANSISTOR ILLUSTRATION



2SK880



2SA1314



2SA1362
2SB1182
2SC2712
2SC4116
2SC4213
DTA114
DTC144
RN2301

IC DESCRIPTION

IC,HD49211BFS

Pin No.	Pin Name	I/O	Description
1	MUTE	I	MUTE control signal. ("H": Mutes monitor output)
2	CTRL	I	Microprocessor data transfer mode input control signal.
3	CCK	I	Microprocessor transfer data synchronizing clock input.
4	CDATA I	I	Microprocessor transfer data input.
5	CDATA O	O	Microprocessor transfer data output.
6	RXPLUL	O	Output to lock or unlock the PLL in the digital input mode. ("H" : Unlock, "L": Lock)
7	FCH	O	Channel clock output. (9.408MHz)
8	FCHI	I	Channel clock input.
9	$\overline{\text{RST}}$	I	Master reset signal. (connected to D+5V)
10	$\overline{\text{MON}}$	I	Internal signal monitor control signal. (connected to D+5V)
11	TEST	I	Connected to D+5V.
12	TEST	I	
13	TEST	I	
14	TEST	I	
15	TEST	I	
16	TEST	I	
17	TEST	I	
18	FLAG	O	Error flag output.
19	C2	O	C correction area output.
20	PBDT	I	Playback signal input.
21	PBCK	I	Playback signal synchronizing clock input.
22	RCDT	O	Recording signal output.
23	TEST	I	Connected to D+5V.
24	REC/$\overline{\text{PB}}$	O	Recording/playback control signal output. ("H": REC, "L":PB)
25	PL AREA	O	ATF Pilot signal recording area output.
26	SREF	O	Servo reference signal output.
27	SWH	I	Head switching signal input.
28	ATF END	I	ATF area detection signal input.
29	PARITY	O	Parity detection result output.
30	TEST	I	Connected to D+5V.
31	D7	I/O	RAM data inputs/outputs. (connected to IC19 on the Main C.B.)
32	D6	I/O	
33	D5	I/O	
34	D4	I/O	
35	D3	I/O	
36	D2	I/O	
37	D1	I/O	
38	D0	I/O	
39	VSS1	—	Ground of signal processor block.
40	A0	O	RAM address outputs. (connected to IC19 on the Main C.B.)
41	A1	O	
42	A2	O	
43	A3	O	
44	A4	O	
45	A5	O	
46	A6	O	
47	A7	O	
48	A8	O	
49	A9	O	
50	A10	O	

Pin N.	Pin Name	I/O	Description
51	A11	O	RAM address outputs. (connected to IC19 on the Main C.B.)
52	A12	O	
53	A13	O	
54	A14	O	
55	$\overline{WE}$	O	RAM write enable signal. ("L": write enable)
56	$\overline{OE}$	O	RAM output enable signal. ("L": output enable)
57	$\overline{CE}$	O	RAM chip select. (If MONITOR is L, SLOT signal is monitored.)
58	INHR	I	A/D R-ch operation stop control signal. (connected to ground)
59	INHL	I	A/D L-ch operation stop control signal. (connected to ground)
60	COMP3	I	A/D converter signal input. (connected to ground)
61	COMP2	I	A/D converter signal input. (connected to ground)
62	COMP1	I	A/D converter signal input. (connected to ground)
63	VDD2	—	Power supply of A/D and D/A output signals. (connected to D+5V)
64	OSC3B	O	37.632MHz oscillator output.
65	OSC3A	I	37.632MHz oscillator input.
66	CSW1	O	A/D, D/A current source control signal output. (unused)
67	CSW2	O	A/D, D/A current source control signal output. (unused)
68	CSW3	O	A/D, D/A current source control signal output. (unused)
69	OFS	O	D/A offset circuit control signal output. (unused)
70	VSS2	—	Ground of A/D, D/A output signals.
71	SHR	O	D/A R-ch sample/hold signal output. (If INHL or INHR is L, serial output is obtained.)
72	SHL	O	D/A L-ch sample/hold signal output. (If INHL or INHR is L, BCK output is obtained.)
73	MPX	O	Input/output L/R discrimination signal output. ("H": R-ch, "L": L-ch)
74	DCR	O	D/A R-ch discharge signal output. (unused)
75	DCL	O	D/A L-ch discharge signal output. (unused)
76	MODE	O	A/D, D/A switching signal output. (unused)
77	ADSR	O	PWM signal output for A/D R-ch offset servo. (unused)
78	ADSL	O	PWM signal output for A/D L-ch offset servo. (unused)
79	SIN	I	Serial signal input from A/D converter (IC101,102)
80	TX	O	Digital interface output.
81	128Fs	O	Clock output (128Fs output)
82	TEST	I	Vss (connected to ground)
83	RX	I	Digital interface input.
84	PDO	O	PLL phase comparator output.
85	EXCK	I	External clock input. (Fs48kHz·32kHz=24.576MHz, Fs=44.1kHz=22.5792MHz)
86	MCK	O	Master clock output. (256Fs output)
87	VSS1	—	Ground of signal processing block.
88	OSC2B	O	11.2896MHz/22.5792MHz oscillator output.
89	OSC2A	I	11.2896MHz/22.5792MHz oscillator input.
90	OSC1B	O	12.288MHz/24.576MHz oscillator output.
91	OSC1A	I	12.288MHz/24.576MHz oscillator input.
92	VDD1	—	Power supply of signal processing block. (connected to D+5V)
93	STRG	I	Frame sync signal input. (unused)
94	FSYNC	O	Frame sync signal output. (100/3Hz)
95	CKFID	I	TX clock accuracy control input. (connected to D+5V)
96	LVCK	I	Level meter data clock input.
97	LVDT	O	Level meter data output.
98	UDBS	O	Sync output of RX input U bit data. (unused)
99	UDCK	O	Sync clock output of RX input U bit data. (unused)
100	UDT	O	RX input bit data output. (unused)

IC,HD49212

Pin No.	Pin Name	I/O	Description
1	CCK	I	Microprocessor transfer data sync clock input.
2	CTRL	I	Microprocessor data transfer mode input control signal.
3	CFGOUT	O	Capstan FG output. Monitors the C FG signal input via pin 13.
4	TACH	O	TACH output. The trailing edge of this signal is used as a reference position during recording.
5	DFGOUT	O	Drum FG output. Monitors the D FG signal input via pin 8.
6	DGND	–	Ground of digital circuit.
7	ENVIN	I	RF signal envelope input.
8	DFGIN	I	Drum FG input.
9	PHASE	I	Connected to the resistors and capacitors of a monostable multivibrator which generates TACH pulses.
10	TEST	I	Test input pin. (unused)
11	DTPFB	O	Drum TACH amp output.
12	DTPIN	I	Drum TACH amp inverted input.
13	CFGIN	I	Capstan FG amp input.
14	SYNCI	I	Sync input during playback. ATF sync signal derived from the RF signal through a BPF.
15	TEST	I	Test input pin. (unused)
16	CSYNC	I	Connected a capacitor which holds the threshold voltage of the sync comparator.
17	PLTIN	I	Pilot amp 1 positive-phase input.
18	AGAIN	I	Inverted input to adjust the gain of A-head pilot amp 1.
19	BGAIN	I	Inverted input to adjust the gain of B-head pilot amp 1.
20	PLT1	O	Pilot amp 1 output.
21	PLT2	I	Pilot amp 2 output.
22	AGND	–	Ground of analog circuit.
23	PLTVTH	I	Pilot comparator threshold voltage input.
24	VREF	O	VDD/2 output. (2.5V)
25	CPLT	I	Connected a capacitor which holds the threshold voltage of the pilot detector.
26	ENV	O	Pilot detector output.
27	CSH1	I/O	Connected a capacitor for sample/hold 1.
28	CSH3	I/O	Connected a capacitor for sample/hold 3.
29	SH3OUT	O	Smple/hold 3 output.
30	VOFT	I	ATF offset voltage input. (unused)
31	CSH2A	I/O	Connected a capacitor for sample/hold 2A.
32	CSH2B	I/O	Connected a capacitor for sample/hold 2B.
33	ATFE1	I	ATF error amp inverted input.
34	ATFE2	O	ATF error amp output.
35	COS1	I/O	Capstan offset servo integrator inverted input.
36	COS2	O	Capstan offset servo integrator output.
37	ROOUT	O	Reel offset servo control voltage buffer output.
38	COOUT	O	Capstan offset servo control voltage buffer ouput.
39	RROUT	O	Reel rising ramp voltage output.
40	CIOUT	O	Capstan I system control voltage buffer output.
41	RPOUT	O	Reel P system control voltage buffer output.
42	CPOUT	O	Capstan P system control voltage buffer output.
43	CIIN	I	Capstan I system PWM input passing through an LPF.
44	CIPWM	O	Capstan I system PWM output.
45	AVDD	–	Power supply of analog circuit. (D+5V)
46	CPIN	I	Capstan P system PWM input passing through an LPF.
47	CPPWM	O	Capstan P system PWM output.
48	DIOUT	O	Drum I system control voltage buffer output.

Pin No.	Pin Name	I/O	Description
49	DIIN	I	Durm I system PWM input passing through an LPF.
50	DIPWM	O	Drum I system PWM output.
51	DOOUT	O	Drum offset servo control voltage buffer output.
52	DOIN	I	Drum offset servo PWM input passing through an LPF.
53	DOPWM	O	Drum offset servo PWM output.
54	DPOUT	O	Drum P system control voltage buffer output.
55	DPIN	I	Drum P system PWM input passing through an LPF.
56	DPPWM	O	Drum P system PWM output.
57	VBRK	I	Drum brake voltage input. (fixed at 4.5V)
58	BRAKE	O	Drum brake control output. ("H": brake, "L": normal)
59	DVDD	—	Power supply of digital circuit. (D+5V)
60	TEST	I	Test input pin. (connected to D+5V)
61	XNOR	I	Normal mode input. (connected to D+5V)
62	XRST	I	Reset input. (connected to D+5V)
63	TFG	I	T reel FG input.
64	SFG	I	S reel FG input.
65	ENVOUT	O	Envelope comparator output.
66	FCH	I	Channel clock input.
67	PARITY	I	Parity signal input.
68	ATFEND	O	ATF END output.
69	SWH	O	Head switching ouput.
70	SREF	I	Servo reference input.
71	PBCK	I	Playback signal sync clock input.
72	ATFMTR	O	ATF monitor during play and HUNT monitor during search.
73	ATFDET	O	ATF DET monitor during play and HOLD monitor during search.
74	PLTOUT	O	PILOT monitor during play and DION monitor during search.
75	SYOUT	O	SYNC monitor during play and CK (PACK divided by 2) monitor during search.
76	PLLLOCK	O	PLL lock monitor. ("H": lock)
77	DLOCK	O	Drum lock output. ("H": lock)
78	CRLOCK	O	Capstan/reel lock output. ("H": lock)
79	RF	O	RF signal presence/absence status output. ("H": present)
80	CDATA	I	Microprocessor transfer data input.

IC,UPD75108GF – J96

Pin No.	Pin Name	I/O	Description
1	KB1	I	Key matrix inputs from the FRONT SWITCH and SWITCH C.Bs.
2	KB0	I	
3	$\overline{\text{INH}}$	O	LCD dispaly inhibit. ("H": lights, "L": goes off)
4	CE	O	LCD driver interface. Chip select (CE) output.
5	LCCK	O	LCD driver interface. Clock (CLK) output.
6	LCDT	O	LCD driver interface. Data output.
7	$\overline{\text{RST}}$	I	Microprocessor reset pin. ("H": mormal,"L"reset)
8	X2	–	Connected a 44.19MHz crystal oscillator.
9	X1	–	Connected a 44.19MHz crystal oscillator.
10	PWON	I	Power switch input. ("H": ON, "L": OFF)
11	$\overline{\text{PLAY}}$	O	DA data enable, etc. ("L": PLAY, PLAY PAUSE)
12	FS32	O	Switches Fs to 256Hz when it is 32kHz. ("H": Fs32kHz)
13	PWOFF	O	Auto power off output.
14	THME	O	Sled motor control pins.
15	THML	O	

	LOAD	EJECT	BRAKE	OFF
THME	0	1	1	0
THML	1	0	1	0

16	CMRS	O	Capstan reverse control signal. ("H": reverse, "L": forward)
17	DON	O	Drum motor on signal. ("H": on, "L": off)
18	RF	I	Presence/absence of RF signal. ("H": present, "L": absent)
19	CRLK	I	Capstan/reel lock signal. ("H": lock, "L": unlock)
20	DLK	I	Drum lock signal. ("H": lock, "L": unlock)
21	PLLK	I	PLL lock signal. ("H": lock, "L": unlock)
22	SERIN	O	Search/normal mode. ("H": search, "L": normal)
23	RPSEL	O	PB/REC. ("H": PB, "L": REC)
24	MUTE	O	DSP LSI (Main C.B IC6) motor output muting. ("H": mute)
25	LVCK	O	Level data transfer clock.
26	VSS	–	Connected to ground.
27	LVDT	I	Level data input.
28	SWH	I	Drum switching pulse input.
29	SFG	I	S reel FG input. 1 rotation: 16 pulses.
30	TFG	I	T reel FG input.
31	DEW	I	Dew sensor input. ("H": dew, "L": normal)
32	TEST	I	TEST mode setting. (see TEST MODE)
33	BATT	I	Battery voltage detection.
34	REM	I	Remote control voltage detection.
35	$\overline{\text{END}}$	I	Supply end sensor input. ("H": normal, "L": end)
36	$\overline{\text{TOP}}$	I	Take-up end sensor input. ("H": normal, "L": top)
37	$\overline{\text{MUTEL}}$	O	Line mute. ("H": normal, "L": mute)
38	$\overline{\text{XMUTED/A}}$	O	D/A mute. ("H": normal, "L": mute)
39	EMPH	O	Emphasis ON/OFF. ("H": ON, "L": OFF)
40	CTRL	O	DSP/SERVO LSI(Main C.B. IC6/IC1)data transfer mode input control signal.
41	CDATAO	I	DSP LSI(Main C.B. IC6) interface. (Data IN)
42	CDATAI	O	DSP/SERVO LSI(Main C.B. IC6/IC1) interface. (Data OUT)
43	CCK	O	DSP/SERVO LSI(Main C.B. IC6/IC1) interface. (Clock OUT)
44	FSYNC	I	DSP frame sync signal input. (100/3Hz)
45	RXPLUL	I	Digital in PLL unlock signal input. ("H": unlock, "L": lock)
46	D/AIN	I	DIGITAL/ANALOG switch input. ("H": digital input, "L": analog input)
47	$\overline{\text{K-HOLD}}$	I	Key hold switch input. ("H": normal, "L": key hold)
48	C-LOCK	I	Cassette compartment lock detection switch. ("H": locked position, "L": normal)
49	$\overline{\text{CASIN}}$	I	Cassette-in detection. ("H": no cassette, "L": cassette)
50	$\overline{\text{RECEN}}$	I	REC enable. ("H": REC disable, "L": REC enable)

Pin No.	Pin Name	I/O	Description
51	$\overline{SOFT}$	I	Recorded tape detection. ("H": recorded tape, "L": normal)
52	$\overline{1.5}$	I	1.5-times tape width detection. ("H": 1.5-times pitch, "L": normal)
53	ENC4	I	Rotary encoder inputs. (to detect the mechanism mode)
54	ENC3	I	
55	ENC2	I	
56	ENC1	I	
57	NC	—	Unused. (D+5V)
58	VDD	—	Power supply. (D+5V)
59	SOL	O	Solenoed ON/OFF. ("H": ON, "L": OFF)
60	KSCN2	O	Key scan outputs to the FRONT SWITCH and SWITCH C.Bs.
61	KSCN1	O	
62	KSCN0	O	
63	KB3	I	Key matrix inputs from FRONT SWITCH and SWITCH C.Bs.
64	KB2	I	

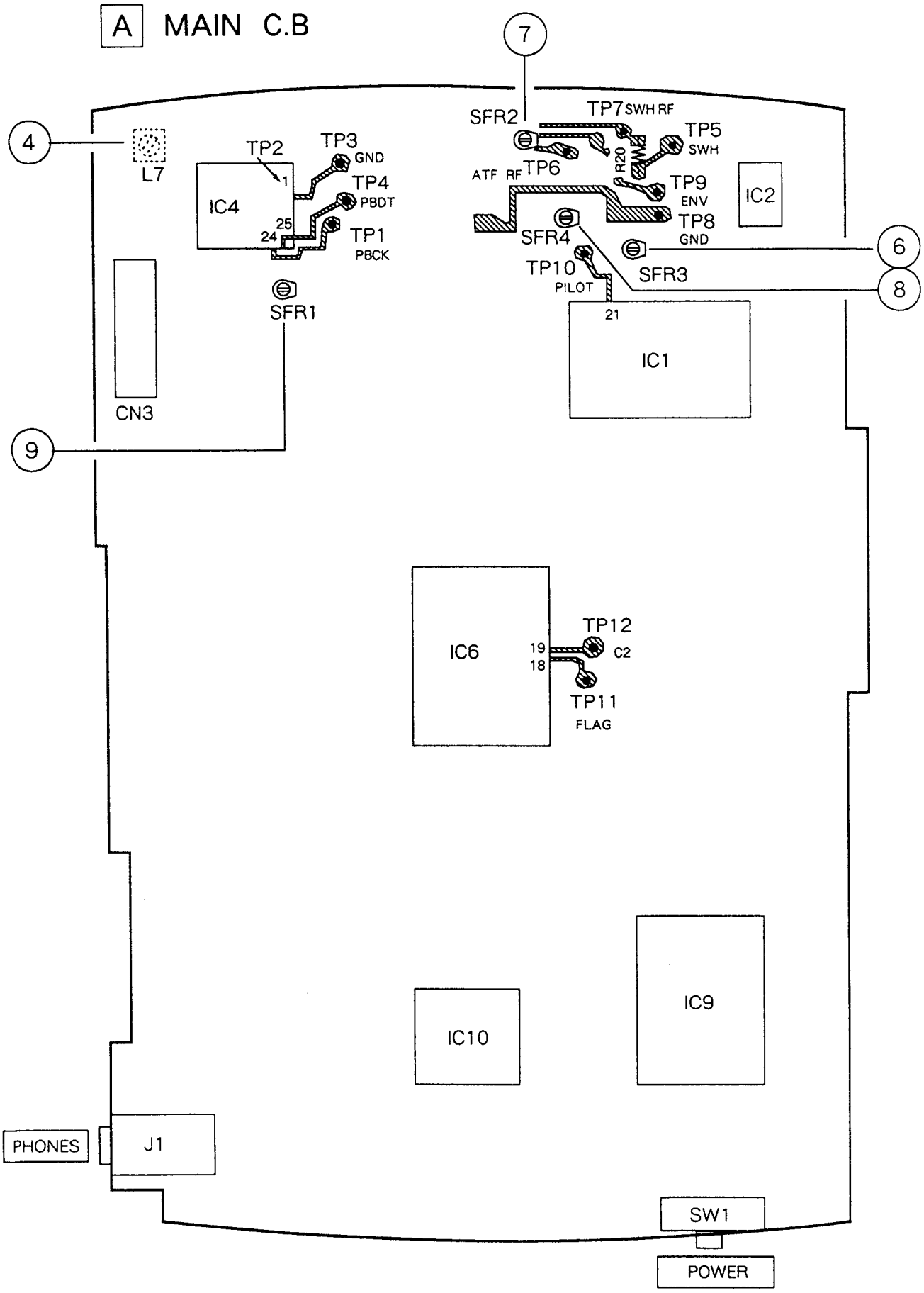
IC,HA12062AMP

Pin No.	Pin Name	I/O	Description
1	LMI	I	Limiter amp input.
2	NC	-	Unused.
3	AVCC	-	Power supply of analog system. (D+5V)
4	SERIN	-	Search/normal mode. (H=search, L=Normal)
5	TEST2	-	Test pin. (connected to ground through a capacitor)
6	BYP1	-	Connected to a bypass capacitor of the bias source.
7	BYP2	-	Connected to a bypass capacitor of the limiter amp.
8	AGND	-	Ground of analog system.
9	CC1	-	Connected to a bypass capacitor of the DC amp.
10	CC2	-	Connected to the resistors and capacitors of a loop filter.
11	BYP3	-	Connected to a bypass capacitor of the bias source.
12	BYP4	-	Connected to a bypass capacitor of the VCO.
13	VCO1	0	Connected to a tank coil of the VCO.
14	VCO2	0	Connected to a tank coil of the VCO.
15	VC1	I	Connected to a tank coil (Secondary circuit) of the VCO.
16	BYP5	-	Connected to a bypass capacitor of the bias source.
17	AGC	-	Connected to a capacitor of AGC detector.
18	BYP6	-	Connected to a bypass capacitor of the AGC circuit.
19	TEST3	-	Test pin. (connected to ground)
20	NC	-	Unused.
21	R/PSEL	I	REC/PB switching signal input. (H=PB, L=REC)
22	CC3	-	Connected to a capacitor of the ASPC filter.
23	CC4	-	Connected to a capacitor of the ASPC filter.
24	PBCK	0	Clock output.
25	PDATA	0	Playback data output.
26	DGND	-	Ground of digital system.
27	BYP7	-	Connected to bypass of the bias source.
28	DVCC	-	Power supply of digital system. (D+5V)

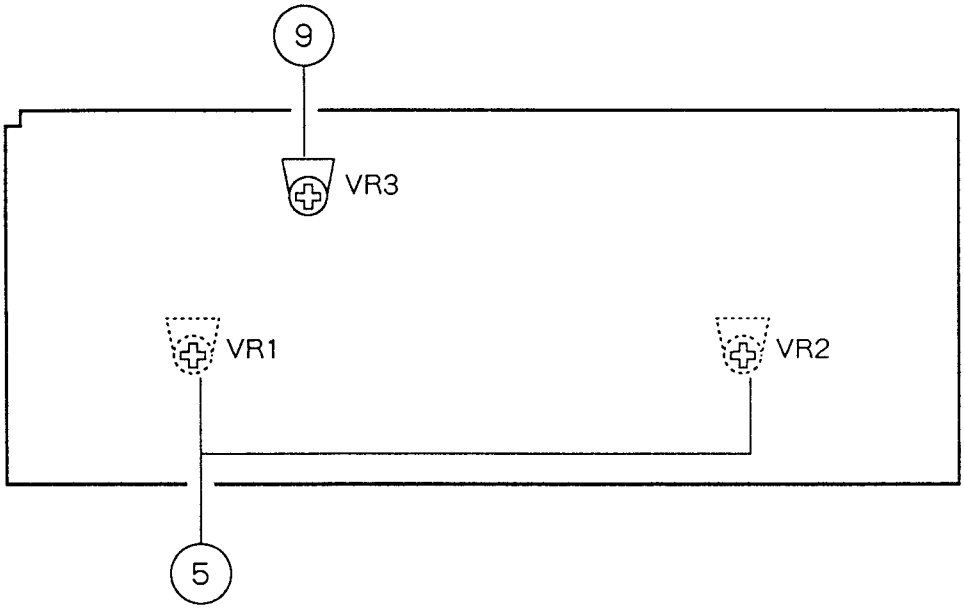
IC,HA12133MP

Pin No.	Pin Name	I/O	Description
1	RECLVB	-	Connected to a resistor which sets the B-ch PCM area recording level.
2	PLTLVB	-	Connected to a resistor which sets the B-ch ATF pilot area recording level.
3	ATFOUT	0	ATF servo preamp output.
4	RFOUT	0	Preamp output.
5	EQ1INP	I	EQ1 amp positive input.
6	EQ1INN	I	EQ1 amp negative input.
7	EQ1OUT	0	EQ1 amp output.
8	BIASPC1	-	Connected to a bypass capacitor of the bias circuit.
9	AGND	-	Ground of analog system.
10	EQ2INP	I	EQ2 amp positive input.
11	EQ2INN	I	EQ2 amp negative input.
12	EQ2GAN	-	Connected to the resistors which set the gain of the EQ2 amp.
13	EQ2OUT	0	EQ2 amp output.
14	DGND	-	Ground of digital system.
15	RDATA	I	Recording data input.
16	PLAREA	I	Signal to switch the ATF pilot area recording level. "High": ATF pilot area "Low" : other
17	REC/$\overline{PB}$	I	Recording/playback switching signal input. "High": recording "Low" : playback
18	SWH	I	Head switching signal input. "High": B-ch "Low" : A-ch
19	TEST	-	Test pin. (connected to ground)
20	DVCC	-	Power supply of digital sytem. (RF+5V)
21	PLTLVA	-	Connected to a resistor which sets the A-ch ATF pilot area recording level.
22	RECLVA	-	Connected to a resistor which sets the A-ch PCM area recording level.
23	VCAOTA	0	A-ch REC VCA output.
24	RECINA	I	A-ch REC amp input.
25	PVCCPC	0	Reference bias output.
26	RECOTA	0	A-ch REC amp input.
27	SNDPCA	-	Connected to a bypass capacitor of the A-ch 2nd amp.
28	SNDINA	I	A-ch 2nd amp input.
29	FSTOTA	0	A-ch 1st amp output.
30	RGNDA	-	Ground.

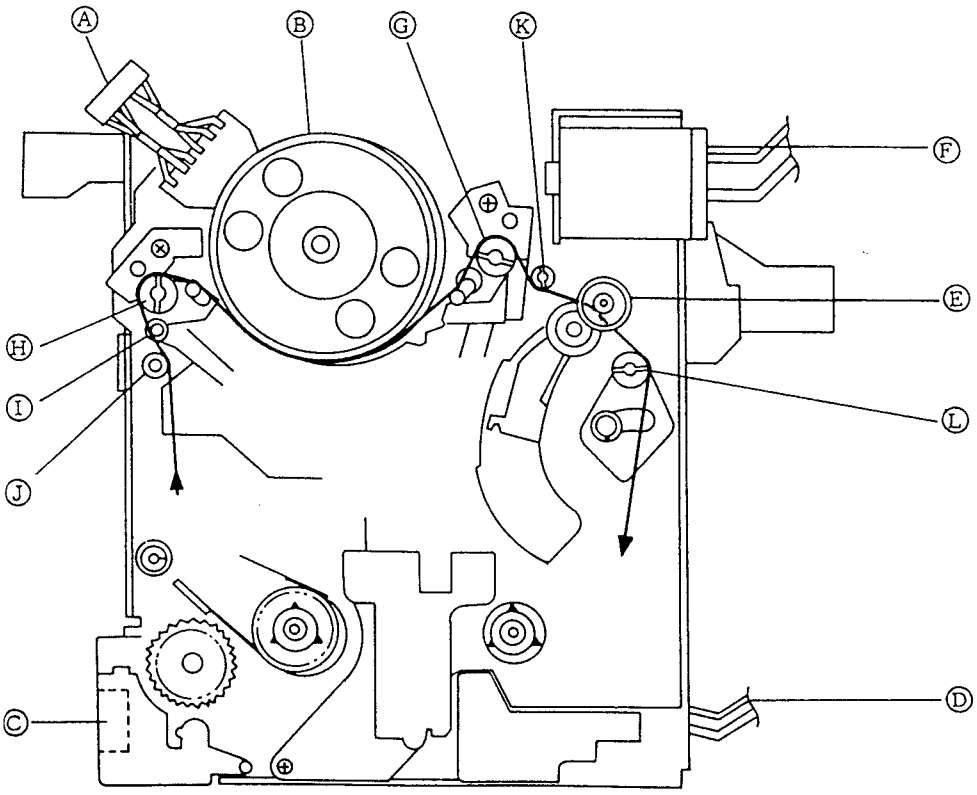
Pin No.	Pin Name	I/O	Description
31	PBSWA	-	Connected to the collector of the A-ch 1st amp switching transistor.
32	FSTINA	I	A-ch 1st amp input.
33	BIASPC2	-	Connected to a bypass capacitor of the bias circuit.
34	PBCNT	-	Connected to the base of the A-ch 1st amp switching transistor.
35	FSTINB	I	B-ch 1st amp input.
36	PBSWB	-	Connected to the collector of the B-ch 1st amp switching transistor.
37	RGNDB	-	Ground.
38	FSTOTB	0	B-ch 1st amp output.
39	SNDINB	I	B-ch 2nd amp input.
40	SNDPCB	-	Connected to a bypass capacitor of the B-ch 2nd amp.
41	RECOTB	0	B-ch REC amp output.
42	AVCC	-	Power supply of analog system. (RF+5V)
43	RECINB	I	A-ch REC amp input.
44	VCAOTB	0	B-ch REC VCA output.


A MAIN C.B
7
SFR2
TP7 SWH RF
TP5 SWH
R20
ATF RF TP6
TP9 ENV
IC2
TP8 GND
4
L7
TP2
TP3 GND
TP4 PBDT
IC4
1
25
24
TP1 PBCK
SFR4
6
TP10 PILOT
SFR3
8
SFR1
21
IC1
CN3
9
IC6
19
18
TP12 C2
TP11 FLAG
IC9
IC10
PHONES
J1
SW1
POWER

B PRE AMP C.B (BOTTOM VIEW)



Tape Path Adjustment Locations



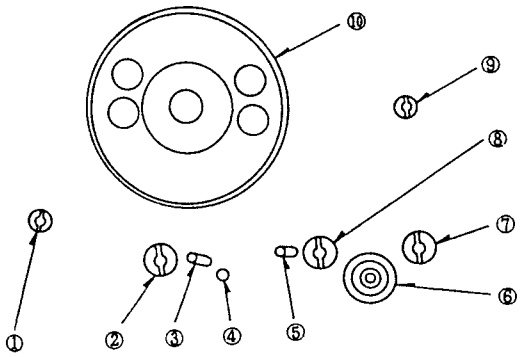
(A) Drum Input Terminal
(B) Drum
(C) Mode Switch
(D) Plunger
(E) Capstan Motor
(F) Sled Motor
(G) Take-up Shuttle
(H) Supply Shuttle
(I) Tension Regulator
(J) Guide Roller S
(K) Guide Roller T
(L) Guide Roller Pinch

Fig-1

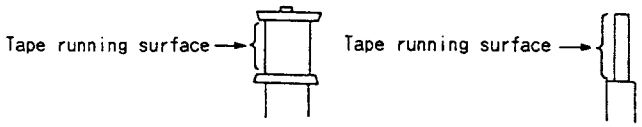
MECHANISM SECTION

Mechanism Adjustment

1. Cleaning (See Figure-2)
   1) Use chamois leather to clean dust and dirt adhering to the shafts and "Guide Rollers" which come into contact with the tape.
   ※ Set the mechanism to the unsledded state and clean each section.



① Guide Roller S
② Supply Roller
③ Shuttle Shaft S
④ Tension Regulator
⑤ Shuttle Shaft T
⑥ Pinch Roller
⑦ Guide Roller Pinch
⑧ Take-up Roller Pinch
⑨ Guide Roller
⑩ Drum



Cleaning points

Fig-2

2. Back-tension Adjustment (See Figure-3)
   1) Supply power from the AC adapter.
   2) Load a tape and set the HD-S100 to the PLAY mode.
   3) Loosen the screw and adjust so that the "Tension Regulator" is between the "Supply Roller" and "Guide Roller S"
   4) Load the torque tape (TW-7111) and set the HD-S100 to the PLAY mode.
   5) Check that the back-tension is 3~5 g .
   6) After adjustment is complete, tighten the screw and coat it with screw locking compound from the back of chassis.

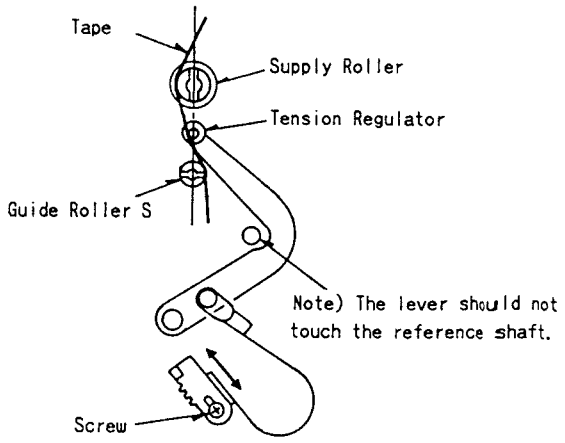
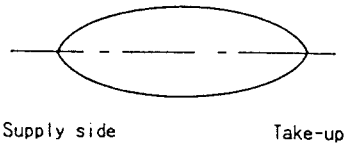


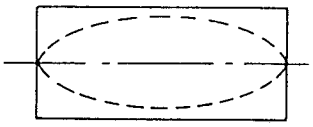
Fig-3

3. Tape Path Adjustment

1) Connection of oscilloscope
   CH-1: TP RF (on Main C.B)
   CH-2: TP SW H (on Main C.B)
   ※ Trigger with CH-2.
2) Setting of test mode : Test mode 2 (Test tape mode).
   See TEST MODE.
3) Play the alignment tape (TY-7251).
4) Observing the oscilloscope, adjust the waveform so that it becomes square. (See Figure-4)
   4-1. Turn "Take-up Shuttle" Ⓖ to adjust the waveform on the take-up side.
   4-2. Turn "Supply Shuttle" Ⓗ to adjust the waveform on the supply side.
   4-3. Finally, adjust so that the waveform becomes as shown in Figure-4.



Waveform before tape path adjustment : Round waveform



Waveform after tape path adjustment : Square waveform

Fig-4

Cautions on adjustment

① If the wavefrom on the oscilloscope is as shown in Figures-5 and 6, adjust the tape path as follows. (See Figures-5 and 6)

If the waveform becomes as shown in Figure-5, turn shuttles Ⓖ and Ⓗ counterclockwise (See Figure-1).

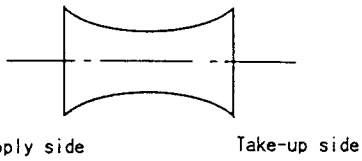


Fig-5

If the waveform becomes as shown in Figure-6, turn shuttels Ⓖ and Ⓗ clockwise (See Figure-1).

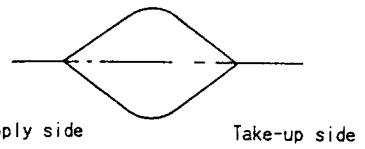


Fig-6

② Check that the following specifications are satisfied. (See Figures-7 and 8)

Linearity of drum :
Value a should be 1/10 or less value A as shown in the waveform in Figure-7.

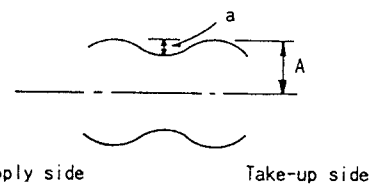


Fig-7

Tape transport characteristic :
If the amplitude of the waveform on the supply side is assumed as B, the amplitude on the take-up side should be 0.9B as shown by the waveform in Figure-8.

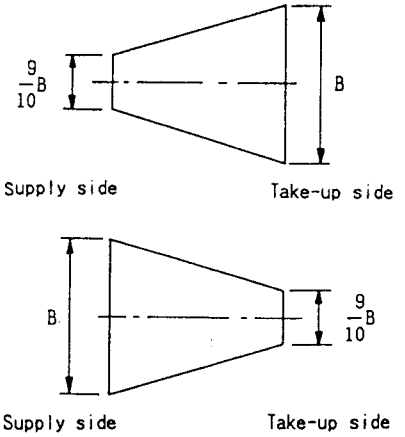
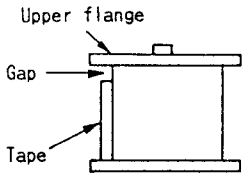


Fig-8

4) Supply side free waveform adjustment (See Figure-9)
Turn shuttle Ⓖ counterclockwise (see Figure-1) to separate the tape from the upper flange and adjust Ⓖ so that the number of peaks in the waveform on the oscilloscope is 1.5~5.



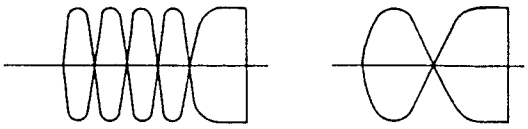


Fig-9

5) Perform step 3) again to adjust the tape path.
6) Take-up side free waveform adjustment.
Turn shuttle Ⓗ counterclockwise (see Figure-1), step 4) and adjust Ⓗ in the same way so that the number of peaks in the waveform on the oscilloscope is 3 or more.
7) Perform step 3) again to adjust the tape path.
8) Tape transport adjustment
① Adjust rollers Ⓙ and Ⓚ (see Figure-1) so that the tape touches the lower flanges of the rollers. (See Figure-10)

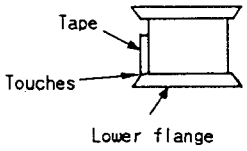


Fig-10

② Adjust "Guide Roller Pinch" Ⓛ (see Figure-1) so that the tape is positioned between the upper and lower flanges and does not touch them. (see Figure-11)

Tape should be positioned between the upper and lower flanges.

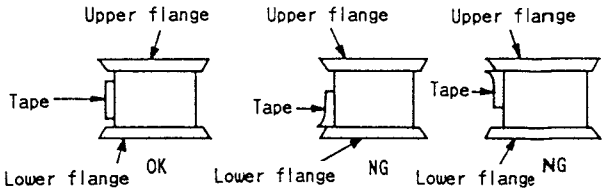
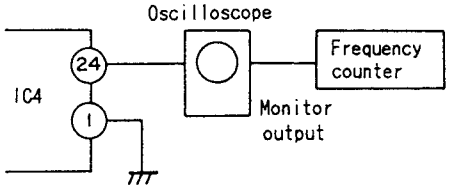


Fig-11

9) Enter the play mode from the fast forward, rewind and stop modes and check that the RF waveform rises from the take-up side.
◎ If this rise is defective, readjust from step 1).
10) Fast forward and rewind a C-120 tape and check that the tape does not come off rollers Ⓙ, Ⓚ and Ⓛ (see Figure-1). Also check that the tape runs, touching the upper flanges of rollers Ⓖ and Ⓗ as shown in Figure-11.
11) Play the tape and check that it does not come off rollers Ⓖ, Ⓗ, Ⓙ, Ⓚ and Ⓛ (see Figure-1).

4. VCO Adjustment

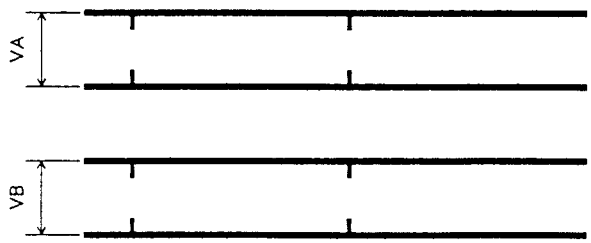
1) Connect a frequency counter to TP1 (IC4 pin ㉔ on [A] MAIN C.B.) via an oscilloscope.
2) Connect TP2 (IC4 pin ①) to TP3 and adjust L7 so that the frequency counter reads 8.35±0.01MHz.
3) After adjustment is complete, disconnect TP2 from ground.



5. Recording Current Adjustment

Conditions : • Test tape: TY-7551
• Test points: TP4(PB DT)
TP5(SWH)
• Adjustment points: VR1 (Ach), VR2 (Bch)
([B] PREAMP C.B)
• Settings of oscilloscope: V axis (0.1v/div.)
T axis (2~5msec)
External trigger
• Error rate counter

1) Connect an error rate counter (NRZ1) to TP4(PBDT).
2) Connect an error rate counter (33Hz) to TP5(SWH).
3) Play the test tape and check that the error rate is 35×10^{-4} or less. If the error rate is incorrect, perform 9. Error Rate Adjustment.
4) Replace the drum connector (CON1) with the jig. (See Fig.12)
Connect two probes and adjust VR 1 and 2 in the record mode so that voltages VA and VB on the oscilloscope are 120mV. After adjustment, remove the jig, attach the drum connector and use a recording/playback tape to record for 30 seconds.



5) Play back the recorded section. If the error rate is 35×10^{-4} or less, the current selected in step 4) is optimum. If either channel is incorrect, continue the following adjustments, and if both channels are incorrect, skip to step (11).

6) Replace the drum connector with the jig and adjust VR 1 and 2 so that VA and VB are set to the following voltages.
If Ach is not within the specification, adjust VR 1.

	VA	VB
	120(mV)	120(mV)
	↓	
I	140(mV)	120(mV)
II	180(mV)	120(mV)

If Bch is not within the specification, adjust VR 2.

	VA	VB
	120(mV)	120(mV)
	↓	
I	120(mV)	140(mV)
II	120(mV)	180(mV)

7) Record signals in state I for 30 seconds and record in state II for 30 seconds.
8) Read the error rate by the procedure in step (5) and select the smaller value.
9) If either channel is still not within the specification, perform the following.
If Ach is not within the specification/
If Bch is not within the specification

	VA	VB		VA	VB
I	140(mV)	100(mV)	I	100(mV)	140(mV)
II	180(mV)	100(mV)	II	100(mV)	180(mV)

10) Perform steps (7) and (8).
11) If both channels are out of the specifications, perform the following.

	VA	VB
I	140(mV)	140(mV)
II	180(mV)	180(mV)

12) Perform steps (7) and (8).
13) If either channel is not within the specification in step (12), set the channel to 200(mV) and perform steps (7) and (8).

Caution: If an error rate counter is not available, do not perform this adjustment.

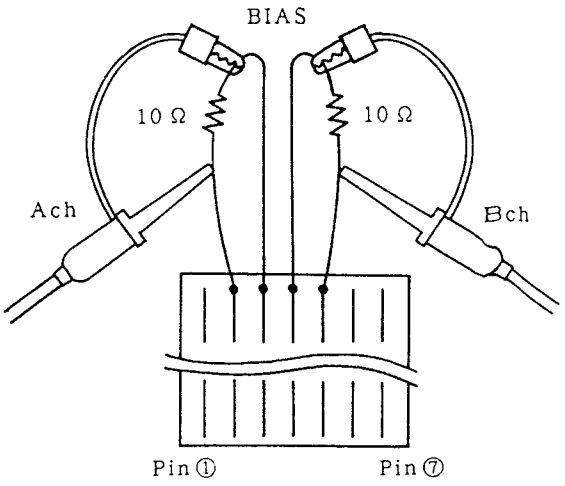
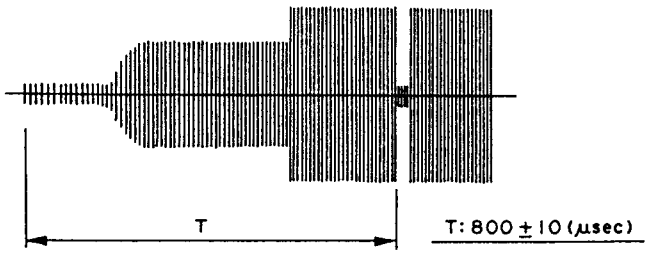


Fig-12

6. TACH Adjustment

Conditions : • Alignment tape: TY-7251
• Test points: TP6(RF),TP5(SWH),TP7(SWH,RF), TP8(GND)
• Adjustment point: SFR3 ([A] MAIN C.B.)
• Settings of oscilloscope: V axis (0.1v/div.)
T axis (2~5msec)
External trigger
• Setting of test mode: Test mode 2
(Test tape mode)
See TEST MODE.

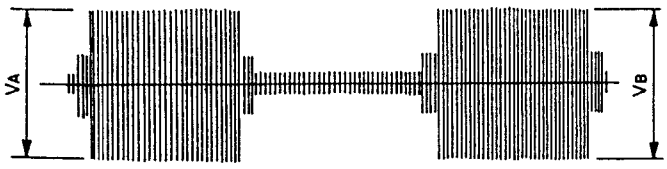
1) Connect an oscilloscope to test points TP6 (RF) and TP5 (SWH).
2) Connect TP7 (SWH, RF) to TP8 (GND).
3) Play the alignment tape and adjustment SFR3 so that the period is 800±10μs at TP6.
4) After adjustment is completed, turn the power switch off. (The test mode is released).
5) Disconnect TP7 from TP8.



7. ENV Adjustment

Conditions : • Alignment tape: TY-7551
• Test points: TP9(ENV), TP5(SWH)
• Adjustment point: SFR2 ([A] MAIN C.B)
• Settings of oscilloscope: V axis (0.1V/div.)
T axis (2~5msec)
External trigger

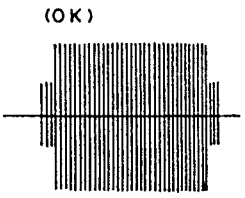
1) Connect an oscilloscope to TP9 (ENV) and TP5 (SWH).
2) Play the first track on the alignment tape and adjust SFR2 so that the voltage at TP9 is 600mV.

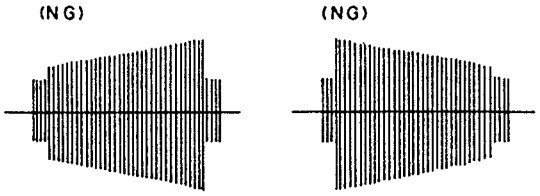


If values VA and VB are different, adjust to the higher voltage.

(Caution)

If the RF waveform is as shown in the figure below, perform tape path adjustment again.

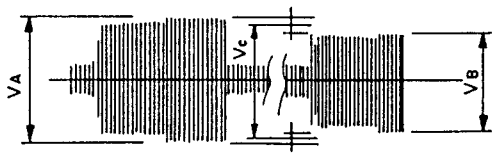




8. ATF Adjustment

Conditions : • Alignment tape: TY-7111
• Test points: TP5(SWH), TP10(PILOT)
• Adjustment point: SFR4 ([A] MAIN C.B)
• Settings of oscilloscope: V axis (50mV/div.)
T axis (2~5msec)
External trigger

1) Connect an oscilloscope to TP10 (PILOT) and TP5 (SWH).
2) Play the alignment tape and adjust SFR4 so that the voltage at TP10 is 200mV.



If values VA and VB are differenct, adjust to the center value (VC) between them.

VC : 200mV

9. Error Rate Adjustment

Conditions : · Alignment tape: TY-7551

· Test points: TP11(IC6 pin ⑱ FLAG)

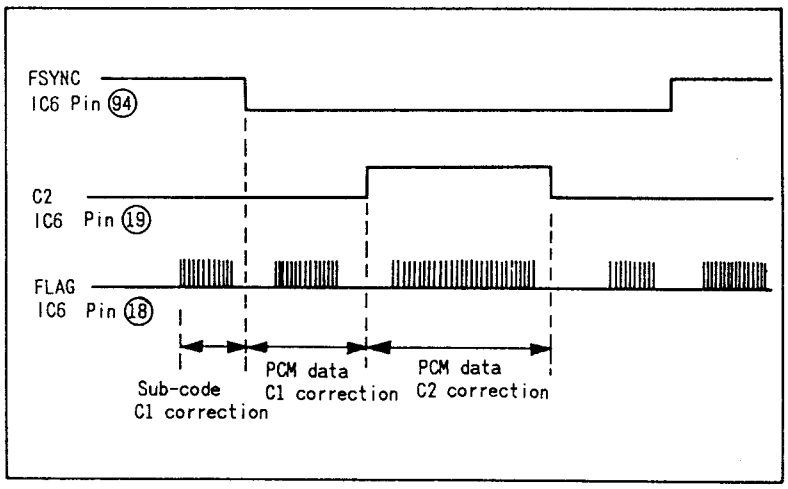
TP12(IC6 pin ⑲ C2)

· Adjustment points: VR3 ([B] PREAMP C.B),

SFR1 ([A] MAIN C.B)

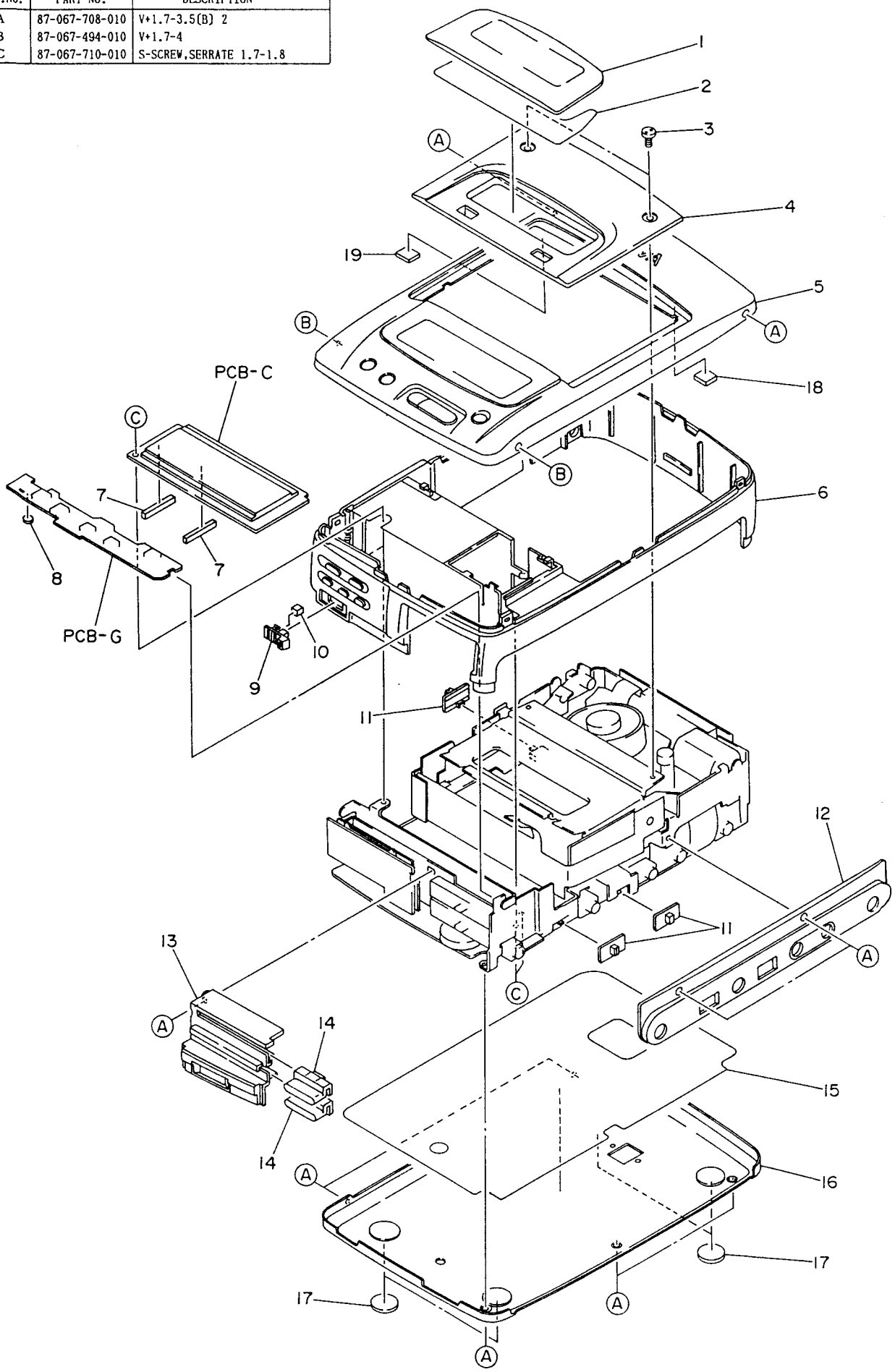
1) Connect CH-1 of the oscilloscope to TP11.
2) Connect CH-2 of the oscilloscope to TP12.
3) Trigger the oscilloscope with CH-2.
4) Adjust VR3 to decrease the flags at TP11 (IC6 pin ⑱ FLAG).
5) Adjust SFR1 to further decrease the flags in the C1 correction section.
6) Perform steps 4) and 5) a few times to minimize the flags.

Error rate adjustment waveform



EXPLODED VIEW – 1

REF.NO.	PART NO.	DESCRIPTION
A	87-067-708-010	V+1.7-3.5(B) 2
B	87-067-494-010	V+1.7-4
C	87-067-710-010	S-SCREW,SERRATE 1.7-1.8

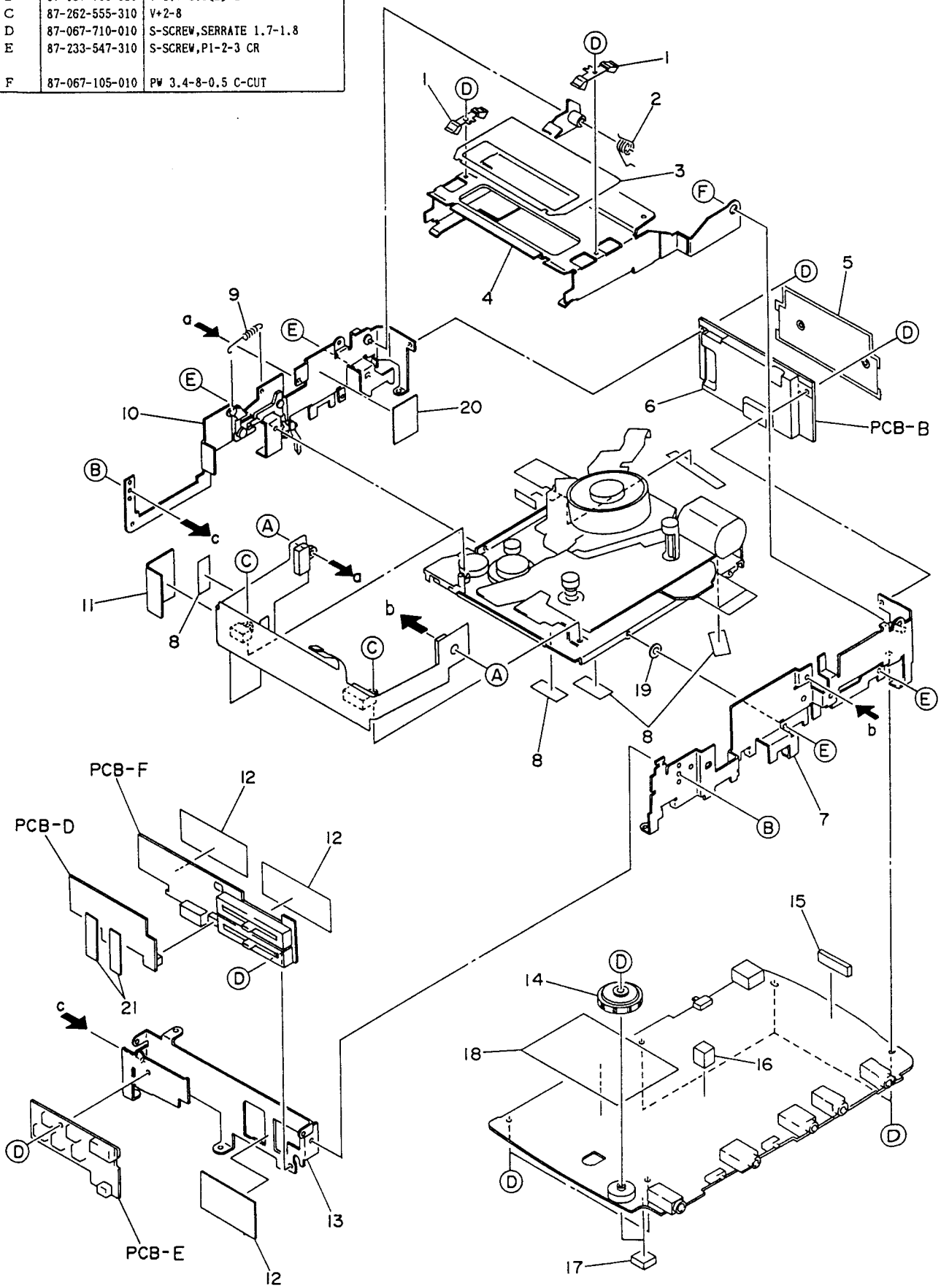


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	1-1	★80-HD1-009-110	WINDOW, CASSETTE	*	1
	1-2	★80-HD1-224-010	ADHESIVE-SHEET, CASSETTE	*	1
	1-3	★89-HD1-018-210	S-SCREW, DECORATIVE		2
	1-4	80-HD1-006-010	LID, CASSETTE	*	1
	1-5	★09-057-114-010	PANEL TOP ASSY	*	1
	1-6	★09-057-115-010	CABINET MAIN ASSY	*	1
	1-7	★80-HD1-235-010	G CUSHION, 2-15-3	*	2
	1-8	★80-HD1-229-010	SHEET, PWB KEY 1	*	1
	1-9	★80-HD1-010-010	KNOB, SLIDE PW	*	1
	1-10	★80-HD1-234-010	G CUSHION, 2.3-3-3	*	1
	1-11	★80-HD1-012-010	KNOB, SLIDE SUB	*	3
	1-12	★80-HD1-002-010	CABINET, SIDE	*	1
	1-13	★80-HD1-005-010	PANEL, VOLUME	*	1
	1-14	★80-HD1-011-010	KNOB, SLIDE VOLUME	*	2
	1-15	★80-HD1-207-110	SHEET, PANEL	*	1
	1-16	★80-HD1-020-010	PANEL, BOTTOM EX	*	1
	1-17	★80-HD1-017-010	FOOT, DIA 9.5-1	*	4
	1-18	★80-HD1-243-010	CUSHION, G 9.2-7.2-0.5	*	1
	1-19	★80-HD1-213-010	CUSHION, S 10-10-2	*	1

EXPLODED VIEW – 2

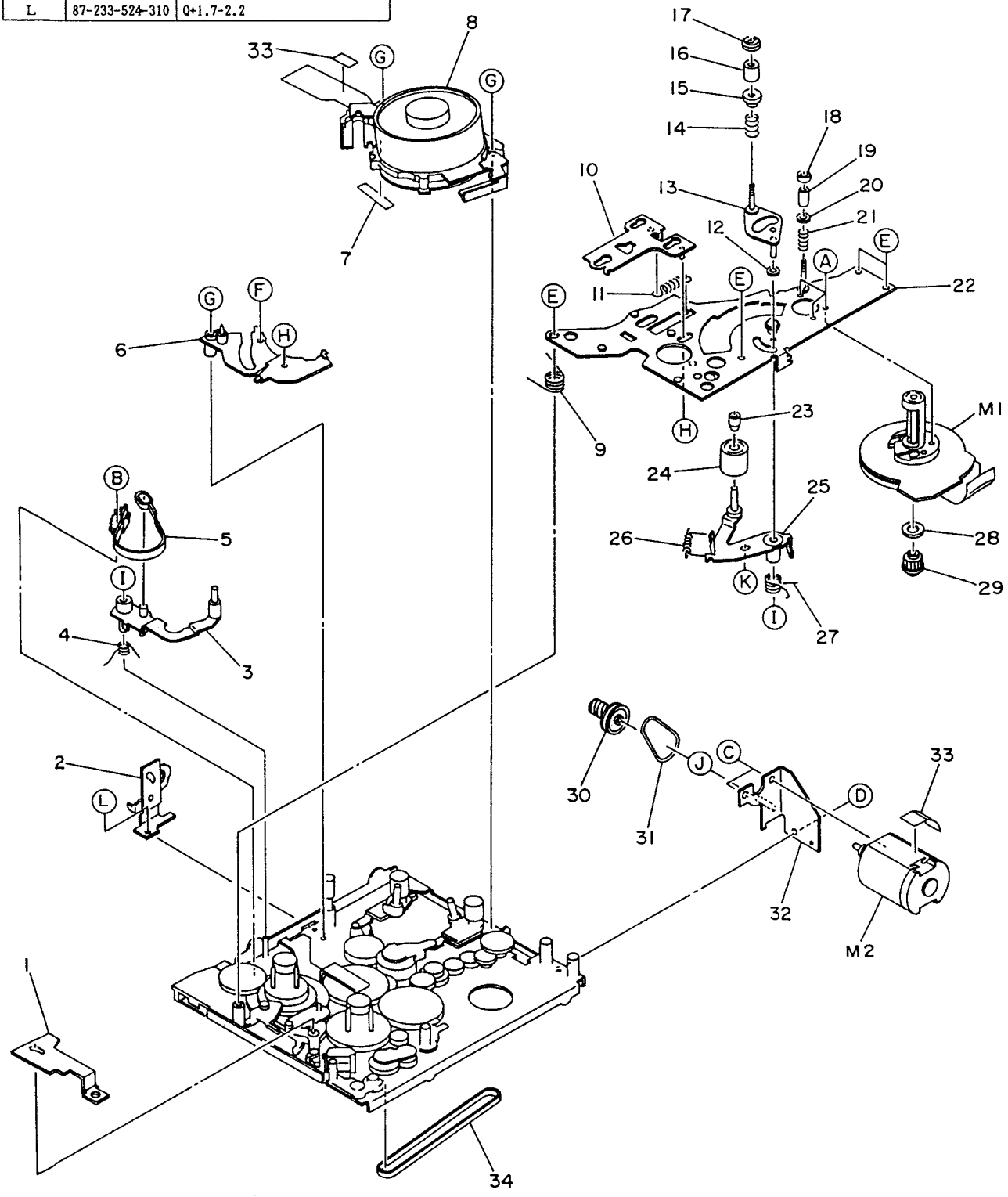
REF.NO.	PART NO.	DESCRIPTION
A	87-233-551-310	Q+2-5
B	87-067-708-010	V+1.7-3.5(B) 2
C	87-262-555-310	V+2-8
D	87-067-710-010	S-SCREW,SERRATE 1.7-1.8
E	87-233-547-310	S-SCREW,P1-2-3 CR
F	87-067-105-010	PW 3.4-8-0.5 C-CUT



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	2-1	★89-HD1-217-110	P-SPRING CASSETTE ASSY		2
	2-2	★89-HD1-219-210	T-SPRING, BOX CASSETTE		1
	2-3	★80-HD1-227-110	SHEET, BOX CASSETTE	*	1
	2-4	★89-HD1-201-210	BOX CASSETTE ASSY		1
	2-5	★80-HD1-209-110	SHEET, RF A	*	1
	2-6	★80-HD1-206-110	COVER, SHIELD	*	1
	2-7	★80-HD1-203-010	FRAME R ASSY	*	1
	2-8	★82-299-509-010	HYMELON, 7-14		4
	2-9	★80-HD1-237-010	E-SPRING, LEVER LOCK L	*	1
	2-10	★80-HD1-201-010	FRAME L ASSY		1
	2-11	★80-HD1-222-010	SHEET, BLIND FLEX	*	1
	2-12	★80-HD1-223-110	SHEET, PROTECT PWB	*	3
	2-13	★80-HD1-205-010	FRAME, FRONT	*	1
	2-14	★80-HD1-015-010	KNOB, ROTARY VOLUME	*	1
	2-15	★80-HD1-212-010	G CUSHION, 3-15-4	*	1
	2-16	★80-HD1-211-010	G CUSHION, 6-6-7.5(H, K, Z)	*	1
	2-17	★89-HD1-260-010	G CUSHION, 5-5-3		3
	2-18	★80-HD1-221-010	SHEET, BLIND PWB	*	1
	2-19	★80-HD1-242-010	SHEET, DIA 5-2-1	*	1
	2-20	★80-HD1-238-010	SHEET, 14-14-0.2	*	1
	2-21	★80-MQ1-209-010	CLOTH, 20-7		2

EXPLODED VIEW – 3

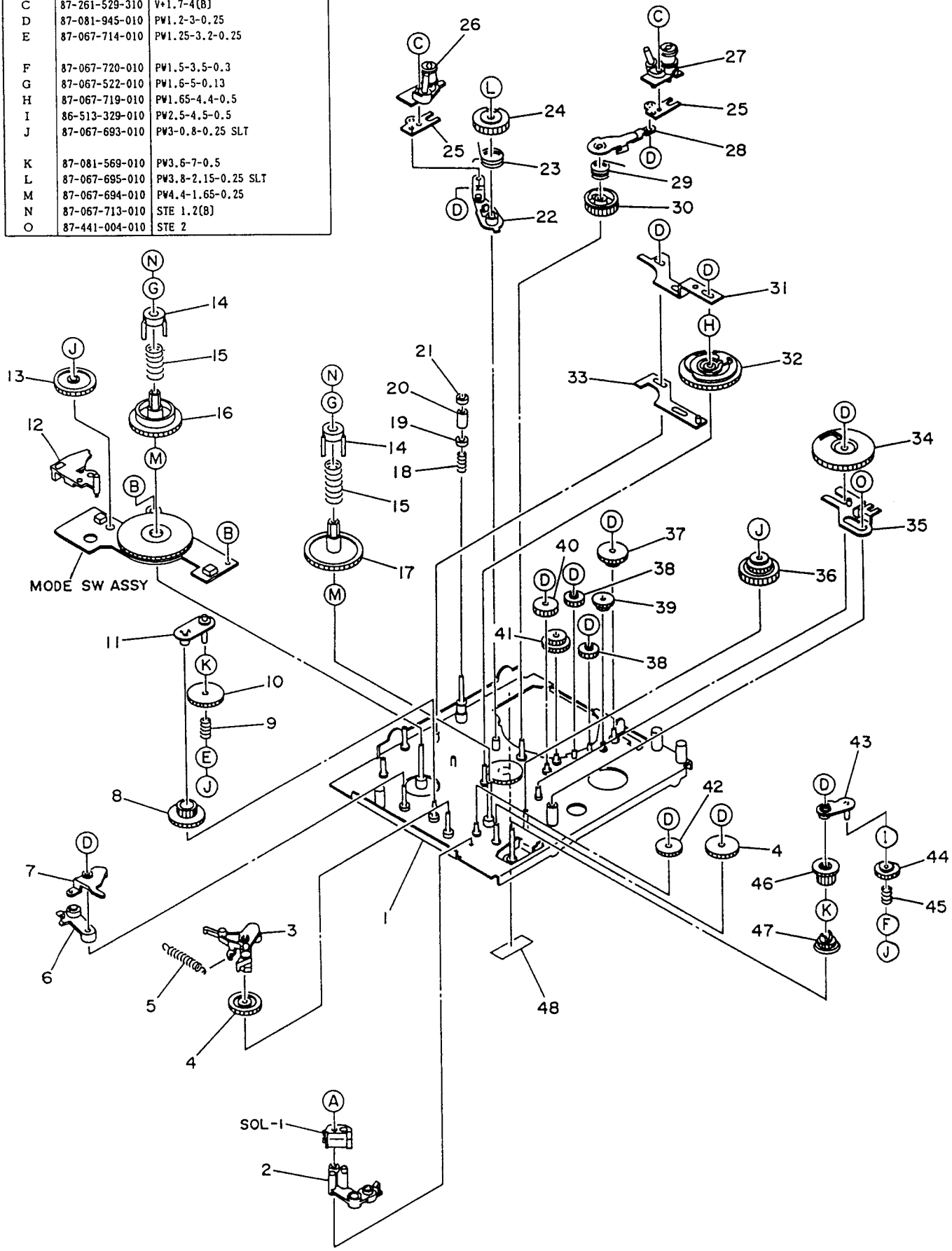
REF.NO.	PART NO.	DESCRIPTION
A	87-263-503-310	V+1.4-2.0
B	87-262-505-310	V+1.4-2.5(B)
C	87-263-522-310	V+1.7-1.8
D	87-263-527-310	V+1.7-3
E	87-067-708-010	V+1.7-3.5(B)
F	87-067-692-010	V+1.7-7(B)
G	87-267-555-310	V+2-8(B)
H	87-081-945-010	PW1.2-3-0.25
I	86-544-440-010	PW1.2-4-0.25 SLT
J	87-067-697-010	PW1.7-3-0.5
K	87-067-709-010	PW2.2-3.5-0.25C
L	87-233-524-310	Q+1.7-2.2



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	3-1	★86-571-275-010	PLATE, SOLENOID		1
	3-2	★86-571-425-010	LEVER ASSY, LID		1
	3-3	★86-571-282-010	LEVER TENSION REGULATOR ASSY		1
	3-4	★86-571-419-010	T-SPRING, TENSION REGULATOR		1
	3-5	★86-571-397-010	BAND BRAKE ASSY		1
	3-6	★86-571-210-110	CHASSIS, MOLD		1
	3-7	★86-571-402-010	SHEET, DRUM		1
	3-8	86-571-603-110	DRUM ASSY		1
	3-9	★86-571-418-010	T-SPRING, SOFT		1
	3-10	★86-571-205-010	FR PLATE ASSY		1
	3-11	★86-571-421-210	E-SPRING, FR		1
	3-12	★87-067-715-010	SHEET, 2.15-5-0.25		1
	3-13	★86-571-284-210	LEVER GUIDE ASSY		1
	3-14	★86-571-416-010	C-SPRING, GUIDE D		1
	3-15	★86-571-299-010	FLANGE, UT GUIDE		1
	3-16	★86-571-312-010	ROLLER, LEVER GUIDE		1
	3-17	★86-571-300-010	FLANGE, LT GUIDE		1
	3-18	★86-571-293-110	FLANGE, UL GUIDE		1
	3-19	★86-571-295-010	ROLLER, L GUIDE		1
	3-20	★86-571-294-010	FRANGE, LL GUIDE		1
	3-21	★86-571-413-010	C-SPRING, GUIDE		1
	3-22	★86-571-203-110	CHASSIS SUB ASSY		1
	3-23	★86-544-288-010	COLLAR, PINCH ROLLER B		1
	3-24	86-544-289-010	PINCH ROLLER ASSY		1
	3-25	★86-571-271-210	PINCH LEVER ASSY		1
	3-26	★86-571-410-010	E-SPRING, PINCH		1
	3-27	★86-571-417-010	T-SPRING, PINCH		1
	3-28	★86-571-446-010	FLANGE, CAPSTAN		1
	3-29	★86-571-250-010	PULLEY, CAPSTAN		1
	3-30	★86-571-215-010	WORM, SLED		1
	3-31	★86-571-396-010	BELT, MOTOR		1
	3-32	★86-571-298-110	HOLDER MOTOR ASSY		1
	3-33	★86-550-404-010	CLOTH, 6-15		2
	3-34	86-571-399-010	BELT, TIMING		1

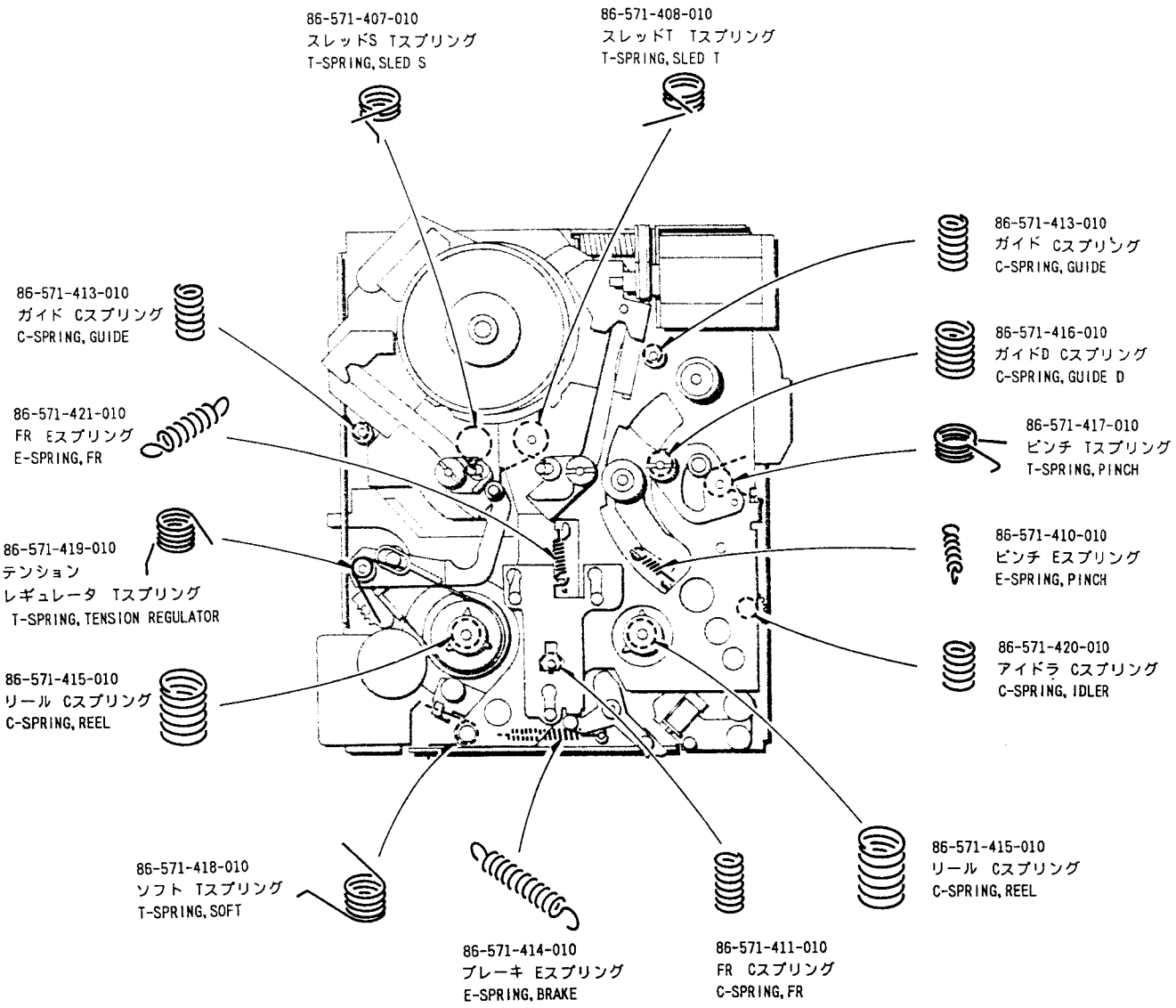
EXPLODED VIEW – 4

REF.NO.	PART NO.	DESCRIPTION
A	87-264-514-310	V+1.4-7
B	87-263-525-010	V+1.7-2.5
C	87-261-529-310	V+1.7-4(8)
D	87-081-945-010	PW1.2-3-0.25
E	87-067-714-010	PW1.25-3.2-0.25
F	87-067-720-010	PW1.5-3.5-0.3
G	87-067-522-010	PW1.6-5-0.13
H	87-067-719-010	PW1.65-4.4-0.5
I	86-513-329-010	PW2.5-4.5-0.5
J	87-067-693-010	PW3-0.8-0.25 SLT
K	87-081-569-010	PW3.6-7-0.5
L	87-067-695-010	PW3.8-2.15-0.25 SLT
M	87-067-694-010	PW4.4-1.65-0.25
N	87-067-713-010	STE 1.2(8)
O	87-441-004-010	STE 2



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	4-1	★86-571-201-210	CHASSIS MAIN ASSY		1
	4-2	★86-571-259-110	HOLDER, T SW		1
	4-3	★86-571-309-010	T BRAKE LEVER ASSY		1
	4-4	★86-571-236-010	GEAR, A FF		2
	4-5	★86-571-414-010	E-SPRING, BRAKE		1
	4-6	★86-571-297-010	SLED BRAKE LEVER ASSY		1
	4-7	★86-571-310-010	S BRAKE LEVER ASSY		1
	4-8	★86-571-232-010	GEAR, A FR		1
	4-9	★86-571-411-010	C-SPRING, FR		1
	4-10	★86-571-233-110	GEAR, B FR		1
	4-11	★86-571-296-010	FR LEVER ASSY		1
	4-12	★86-571-258-110	HOLDER, SW S		1
	4-13	★86-571-392-010	FR GEAR ASSY		1
	4-14	★86-571-253-010	REEL, CAP		2
	4-15	★86-571-415-110	C-SPRING, REEL		2
	4-16	86-571-230-010	REEL, DISK S		1
	4-17	86-571-391-010	REEL DISK ASSY		1
	4-18	★86-571-413-010	C-SPRING, GUIDE		1
	4-19	★86-571-294-010	FLANGE, LL GUIDE		1
	4-20	★86-571-295-010	ROLLER, L GUIDE		1
	4-21	★86-571-293-010	FLANGE, UL GUIDE		1
	4-22	★86-571-281-010	SLED ARM ASSY S		1
	4-23	★86-571-407-010	T-SPRING, SLED S		1
	4-24	★86-571-223-010	GEAR, SLED H		1
	4-25	★86-571-265-110	SHUTTLE PLATE ASSY		2
	4-26	★86-571-243-210	SHUTTLE ASSY S		1
	4-27	★86-571-244-310	SHUTTLE ASSY T		1
	4-28	★86-571-280-010	SLED ARM ASSY T		1
	4-29	★86-571-408-010	T-SPRING, SLED T		1
	4-30	★86-571-222-010	GEAR, SLED G		1
	4-31	★86-571-283-010	CASSETTE PLATE ASSY		1
	4-32	★86-571-235-210	CAM, B		1
	4-33	★86-571-207-010	TENSION R PLATE ASSY		1
	4-34	★86-571-234-010	CAM, A		1
	4-35	★86-571-211-010	PINCH PLATE ASSY		1
	4-36	★86-571-214-210	TUP GEAR ASSY		1
	4-37	★86-571-216-110	WORM WHEEL, SLED		1
	4-38	★86-571-217-010	GEAR, SLED B		2
	4-39	★86-571-238-110	GEAR, SLED A		1
	4-40	★86-571-220-010	GEAR, SLED E		1
	4-41	★86-571-219-010	GEAR, SLED D		1
	4-42	★86-571-237-110	GEAR, B FF		1
	4-43	★86-571-256-110	IDLER LEVER ASSY		1
	4-44	★86-571-227-010	GEAR, IDLER A		1
	4-45	★86-571-420-010	C-SPRING, IDLER		1
	4-46	★86-571-228-010	GEAR, B IDLER		1
	4-47	★86-571-242-010	PULLEY, IDLER		1
	4-48	★86-571-403-010	SHEET, DRUM		

SPRING APPLICATION POSITION



■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q.TY
	1	★80-HD1-903-010	INSTRUCTION BOOKLET,H (H,K,Z,U)	※	1
	2	★80-HD1-904-010	INSTRUCTION BOOKLET,E (Z)	※	1
	3	★80-HD1-615-010	PB – 25	※	1
	4	★80-HD1-951-010	BAG CARRING	※	1
	5	★80-HD1-621-010	AC ADAPTOR,AC – 690H (H)	※	1
	6	★80-HD1-622-010	AC ADAPTOR,AC – 690K (K)	※	1
	7	★80-HD1-623-010	AC ADAPTOR,AC – 690E (Z)	※	1
	8	★80-HD1-624-010	AC ADAPTOR,AC – 690U (U)	※	1
	9	★89-HD1-954-010	REMOTE CONTROLLER,RC – A1Y		1
	10	★83-137-620-010	CORD,PIN		2

727105,861377